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Bureau of Land Management

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September 2020 Competitive Oil and Gas Lease Sale DOI-BLM-UT-0000-2020-0004 -EA

A wide-angle photograph of a rugged, semi-arid landscape. The foreground is a grassy plain with scattered shrubs and a dirt road. In the middle ground, there are rolling hills and ridges. In the background, a range of mountains is visible, with some peaks covered in snow. The sky is filled with heavy, dark clouds, suggesting an overcast or stormy day.

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Utah State Office
440 W 200 S
Suite 500
SLC, UT 84101

Table of Contents

Chapter 1	Purpose & Need	1
1.1	Project Location and Legal Description.....	1
1.2	Introduction.....	2
1.3	Background.....	3
1.4	Purpose and Need	5
1.5	Decision to be Made	5
1.6	Plan Conformance Review.....	5
1.7	Other Planning and NEPA Documents	7
1.8	Relationship to Relevant Laws, Regulations, Policies and Other Plans	7
1.9	Issues Identified	8
1.10	Issue Statement Rationale for Not Further Discussing in Detail in the EA	9
1.11	Public Comment Period	17
Chapter 2	Description of Alternatives	18
2.1	Introduction.....	18
2.2	Analysis Assumptions.....	18
	Reasonably Foreseeable Development Scenario.....	18
2.3	Alternative A – Proposed Action	22
2.4	Alternative B – No Action	23
2.5	Other Alternatives Considered but Not Analyzed in Detail.....	23
2.5.1	Removing Parcels from the Sale to Address Specific Resource Concerns.....	23
2.5.2	Adding Stipulations Beyond Those Required by the Management Plan	23
Chapter 3	Affected Environment.....	24
3.1	Introduction.....	24
3.2	General Setting.....	24
3.3	Resources/Issues Brought Forward for Analysis	25
3.3.1	Issue 1: What quantity of air pollutants would be produced based on the assumptions for analysis? How would air pollutant emissions from subsequent development of leased parcels affect air quality?.....	25
3.3.1.1	Affected Environment.....	25
3.3.1.2	Environmental Consequences	27
3.3.1.3	Required Design Constraints/Mitigation Measures	29
3.3.1.4	Cumulative Impacts	30

3.3.2	Issue 2: What quantity of greenhouse gas emissions (GHG) would be generated from subsequent oil and gas development of leased parcels based upon assumptions for analysis? How do these amounts compare to other sources of GHGs?.....	36
3.3.2.1	Affected Environment.....	36
3.3.2.2	Environmental Consequences	40
3.3.2.3	Mitigation of Impacts from GHG Emissions and Climate Change.....	43
3.3.2.4	Cumulative Impacts	44
3.3.3	Issue 3: What are the potential impacts to social and economic conditions and Environmental Justice?	48
3.3.3.1	Affected Environment.....	48
3.3.3.2	Environmental Consequences	50
3.3.3.3	Required Design Constraints/Mitigation Measures	55
3.3.3.4	Cumulative Impacts	55
Chapter 4	Consultation and Coordination	57
4.1	Introduction.....	57
4.1.1	National Historic Preservation Act (NHPA) of 1966.....	57
4.2	Persons, Groups, and Agencies Contacted/Consulted	59
4.2.1	Endangered Species Act of 1973	59
4.3	Public Participation.....	66
	Modifications Based on Public Comment and Internal Review	67
4.4	Preparers	67
Chapter 5	References.....	69
Chapter 6	Appendices.....	76
	Appendix A – Parcel List with Stipulations and Notices	77
	Appendix B – Stipulations and Notices	96
	Stipulation Summary Table	96
	Notice Summary Table	106
	Threatened and Endangered Species Notices	115
	Appendix C – Figures/Maps	137
	Appendix D – Interdisciplinary Parcel Review Team Checklist.....	148
	Applicable to all Field Offices.....	148
	Color Country District	151
	Green River District.....	162

West Desert District..... 184

Appendix E – General Conformity Applicability 193

Appendix F – Acronyms/Abbreviations..... 195

Appendix G – Reasonably Foreseeable Development of Leases Scenario 196

 Plan Conformance..... 197

 Development..... 200

 Well Drilling and Completion Operations 201

 Production Operations 202

 Produced Water Handling..... 203

 Maintenance Operations 203

 Plugging and Abandonment..... 204

Appendix H – Comments and Responses on the postponed June Parcels 205

Appendix I – Comments and Responses..... 222

Appendix K – Near Field Air Quality Impacts Analysis, Prepared by Kleinfelder 257

List of Tables

Table 1. Parcels by Field Offices 1
Table 2. Issues Identified for Detailed Analysis 9
Table 3. Issues not included in Further Detail in the Environmental Assessment..... 11
Table 4 Assumptions for Analysis for the Nominated Parcels 19
Table 5. 2016 to 2018 Criteria Pollutant Design Values 26
Table 6. Annual Emissions Estimate for as Single Well (tons/year) 28
Table 7 Greenhouse Gases and Their Global Warming Potentials 36
Table 8. Annual State, National, and Global GHG Emissions (CO₂e) in Million Metric Tons (MMT) per Year..... 37
Table 9. 2019 Baseline Annual GHG Emissions (MT CO₂e/yr.) from Existing Oil and Gas Wells..... 38
Table 10. Global Atmospheric Concentration and Rate of Change of Greenhouse Gases 38
Table 11. Current Climate Conditions and Trends in Utah 39
Table 12. Estimated Emissions from Construction and Operating Potential Future Wells 40
Table 13. Annual Estimated Emissions from Combustion of Produced Oil and Gas from the Proposed Action..... 41
Table 14. Oil and Gas Employment Effects 52
Table 15. Recreation and Tourism Employment Effects 53
Table 16. List of Contacts and Findings 61
Table 17. List of Contacts and Findings for the Parcels Previously in June..... 64
Table 18. Preparers of This EA..... 68
Table 19 Relationship to Statues, Regulations, and Other Plans 196

List of Figures

Figure 1. ARMS predicted ozone design values with on the books controls for oil and gas emissions in the year 2021.....	32
Figure 2. ARMS predicted PM2.5 design values with on the books controls for oil and gas emissions in the year 2021.....	33
Figure 3. UDAQ CAMx photochemical modeling domains and predicted PM2.5 concentrations from the January 7, 2011 episode (red represents higher concentrations ~35 µg/m ³ , blue and gray are lower concentrations).....	34
Figure 4. Estimated future GHG emissions from oil and gas wells in Utah, based on EIA projected oil and gas production for the Rocky Mountain region (EIA 2020).....	46
Figure 5. GHG emissions pathways for lead to radiative forcing of 8.5 W/m ² (red), 6.0 W/m ² (gray), 4.5 W/m ² (yellow), and 2.6 W/m ² (blue) by the year 2100. Source of figure: (Fuss, et al. 2014).....	47
Figure 6. Fillmore Field Office overview.	138
Figure 7. Fillmore Field Office parcels and oil and gas leasing categories.	139
Figure 8. Richfield Field Office overview (north).	140
Figure 9. Richfield Field Office oil and gas leasing categories for the northern parcels.	141
Figure 10. Richfield Field Office overview of the southern parcels.....	142
Figure 11. Richfield Field Office oil and gas leasing categories for the southern parcels.....	143
Figure 12. Richfield Field Office (east) and Price Field Office overview.....	144
Figure 13. Richfield Field Office (east) and Price Field Office oil and gas leasing categories.	145
Figure 14. Vernal Field Office overview.....	146
Figure 15. Vernal Field Office oil and gas leasing categories.	147

**Environmental Assessment
 DOI-BLM-UT-0000-2020-0004-EA**

Chapter 1 Purpose & Need

1.1 Project Location and Legal Description

A total of 23 parcels encompassing 27,387.86 acres are being considered and identified in the Notice of Competitive Lease Sale (NCLS) for the September Lease Sale (Table 1). The parcels are located on public lands administered by the BLM Fillmore Field Office (FFO), Price Field Office (PFO), Richfield Field Office (RFO), and Vernal Field Office (VFO), as described in Appendix A.

Table 1. Parcels by Field Offices

Field Office	Nominated Parcels going forward in NCLS	Nominated Acres
Vernal	2	1,440.00
Price	2	1760.00
Fillmore	2	1,931.88
Richfield	17	22,255.98¹
Total:	23	27,387.86

Background

The oil and gas lease parcels that were originally scheduled to be identified in the NCLS for the June 2020 Utah Lease Sale (June Sale)² have been incorporated into the September 2020 Utah Lease Sale. The four parcels from the June Sale (4,376.50 acres) have been renumbered as follows:

June 2020		September 2020	
Parcel 001	renumbered to	Parcel 133	
Parcel 002	renumbered to	Parcel 134	
Parcel 013	renumbered to	Parcel 135	
Parcel 014	renumbered to	Parcel 136	

The September 2020 preliminary parcel list contained 99 parcels covering 152,125 acres for the September 2020 Competitive Oil and Gas Lease Sale (lease sale) and are located on public lands

¹ The Richfield Field Office acreage changed based on the recent Cadastral review.

² In compliance with Secretary Order 3380, the estimated total lead agency costs associated with developing and producing this EA is listed on the front cover. Due to the delay in posting the NCLS, the BLM has postponed the June Sale and added the four parcels from that sale into this document. The cost also includes the work done for the June EA.

administered by the BLM FFO, Moab Field Office (MbFO), PFO, RFO, and VFO. The June 2020 preliminary parcel list contained 4 parcels covering 4,376.50 acres for the September 2020 Competitive Oil and Gas Lease Sale (lease sale) and are located on public lands administered by the BLM Moab Field Office. When combined with the four MbFO parcels from the June Sale, 103 parcels were being considered in the September Lease Sale.

Due to the recent decision in *Montana Wildlife Federation v. Bernhardt*, 2020 WL 2615631 (D. Mont. May 22, 2020), the BLM Utah State Office, in an abundance of caution, has postponed the consideration of offering six parcels (013, 014, 015, 016, 017 and 028) in the September 2020 Oil and Gas Lease Sale because these parcels include Greater Sage-grouse habitat. This postponement will allow BLM Utah the opportunity to further assess prioritization considerations of leasing in Greater Sage-grouse habitat. BLM may consider these six parcels in future competitive oil and gas lease sales based on the evaluation of factors for prioritization.

Prior to the public comment period, a total of 26 parcels (38,075 acres)³ were deferred from the lease sale due to conflicts that cannot be resolved by the time the NCLS would be published. These 26 parcels included the six parcels mention above located in Greater Sage-grouse habitat (see footnote 3). The BLM has now deferred 54 additional parcels (034, 037-039, 045, 048, 051-059, 066, 068-085, 088, 097, 111-113, 116-124, 127, and 132-136)⁴ encompassing 86,616.91 acres after the public comment period closed. All of the parcels located within the MbFO (including the four parcels from June) have now been deferred. A total of 80 parcels have been deferred from the original 103 parcels that were considered for the lease sale. These 80 parcels encompassing 124,692 acres may be evaluated in a future oil and gas lease sale.

Therefore, a total of 23 parcels encompassing 27,387.86 acres are being considered for the lease sale and will be identified in the NCLS (Table 1).

1.2 Introduction

It is the mandate of the BLM, as derived from various laws, including the Mineral Leasing Act (MLA) and the Federal Land Policy and Management Act of 1976 (FLPMA), as amended, to support the exploration and development of oil and gas owned by the Federal Government. The MLA establishes that deposits of oil and gas owned by the United States are subject to disposition in the form and manner provided by the MLA under the rules and regulations prescribed by the Secretary of the Interior, where consistent with FLPMA and other applicable laws, regulations, and policies. Additionally, the Federal Onshore Oil and Gas Leasing Reform Act of 1987 (FOOGLA) states that lease sales shall be held for

³ The UTSO deferred 17 parcels (040, 060, 061, 062, 096, 098, 099, 100, 101, 102, 103, 104, 105, 106, 109, 110 and 131) within the Moab Field Office, one parcel (032) within the Price Field Office, two parcels (001 and 002) within the Salt Lake Field Office, and six parcels within the Richfield Field Office (013, 014, 015, 016, 017, and 028) prior to the public comment period.

⁴ The UTSO deferred 54 parcels after the public comment period. One within the Price Field Office (034) and 53 parcels within the Moab Field Office (037, 038, 039, 045, 048, 051, 052, 053, 054, 055, 056, 057, 058, 059, 066, 068, 067, 069, 070, 071, 072, 073, 074, 075, 076, 077, 078, 079, 080, 081, 082, 083, 084, 085, 088, 097, 111, 112, 113, 116, 117, 118, 119, 120, 121, 122, 123, 124, 127, 132, 133, 134, 135, and 136).

each State where eligible lands are available at least quarterly and more frequently if the Secretary of the Interior determines such sales are necessary. Eligible lands are those that are open for leasing, and which the BLM has received Expressions of Interest (EOIs) nominating lands to be offered for lease or which the BLM has identified as high priority for leasing to prevent drainage. For the September 2020 Lease Sale, all parcels were nominated by the public. Leasing is an administrative action that does not directly cause environmental consequences. It is also 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. Compliance with valid, nondiscretionary statutes (laws) is included in the standard lease terms, (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) Nondiscretionary laws includes Clean Water Act, Clean Air Act, Endangered Species Act, National Historic Preservation Act, and Federal Land Policy and Management Act, which are applicable to all BLM administered surface disturbing actions, including those on split estate lands and can preclude all surface use a lease if necessary. However, many other resources do not have statutory protections, standard lease terms provide for reasonable measures to minimize adverse impacts to specific resource values, land uses, but direct, indirect, or cumulative effects to resources and uses could result from future levels of lease exploration or development, and these resources must be considered before the BLM makes an irretrievable commitment to allowing such development. The future levels of development are uncertain and undetermined, hence analysis focuses on identifying reasonably foreseeable impacts. After reviewing the parcels, the Utah State Office (UTSO) determined it was necessary to prepare this environmental assessment (EA) to comply with the National Environmental Policy Act (NEPA). This EA summarizes the environmental analysis of the potential development of the parcels proposed to be offered for lease. The analysis is step down and issue based to identify potential reasonably foreseeable impacts that could result from the implementation of the proposed action or no action alternatives and provides evidence for making a Finding of No Significant Impact (FONSI). If the analysis indicates development of some parcels would result in significant⁵ reasonably foreseeable impacts not disclosed in the selected alternatives in the EISs listed in Section 1.7, the decision maker would determine those parcels should be deferred and a FONSI prepared for the remaining parcels. The FONSI and Decision Record (DR) could then be signed approving the modified proposed action.

1.3 Background

During the land use planning process required by the FLPMA⁶, the BLM analyzes several alternatives before deciding which public lands and minerals are open for leasing and under what terms and conditions. In accord with the Land Use Plan (LUP), lands can be deemed open to leasing under standard terms and conditions, closed to leasing, or open under special operating constraints, including No Surface Occupancy (NSO), identified as lease stipulations at the lease stage. Lease stipulations (S) (43 CFR 3101.1-2) are used to mitigate potential impacts to resources. Any surface management of non-BLM

⁵ Significance is defined by NEPA, and is found in 40 Code of Federal Regulations (CFR) 1508.27.

⁶ The land use planning process can result in several types of Land Use Plans (LUPs) or the amendment of existing LUPs. The most common LUP is a Resource Management Plan (RMP), which guides the management of all resources within the boundaries of a BLM Field Office. Older LUPs may be limited to managing part of a Field Office, or multiple Field Offices.

administered land overlaying federal minerals is determined by the BLM in consultation with the appropriate surface management agency or the private surface owner.

The BLM implements the LUP by processing public EOIs on a quarterly basis as discussed in Section 1.2. From these EOIs, the BLM prepared the parcels and determines whether or not the existing NEPA analyses prepared for the LUPs provide basis for leasing oil and gas resources within these parcels or if additional analysis is needed before making a leasing decision.

After the EOI cutoff date the UTSO reviews the nominations, removes lands not legally available for leasing, compiles the remaining lands and sends a preliminary parcel list to the appropriate District Office where the parcels are located. Whereas the decision to open lands to leasing was not an irretrievable commitment of resources, implementing the decision by offering parcels may be. As such, when the BLM incrementally implements the RMP decision by proposing to lease specific parcels, its resource specialists review the area *potentially* affected to determine if there is new information or circumstances, and if there is, if it would substantially change the analysis in the planning documents (keeping in consideration the lease stipulations), and if the reasonably foreseeable impacts are similar both quantitatively and qualitatively to those identified in the programmatic documents, again, keeping in consideration the lease stipulations.

Field Office staff reviews the legal descriptions of the parcels to confirm they are in areas open to leasing under the relevant LUPs, ensures appropriate stipulations have been applied and identify any special resource conditions of which potential bidders should be made aware, resulting in the attachment of lease notices (LN) (43 CFR 3101.1-3). Also included in all leases are two mandatory stipulations for the statutory protection of cultural resources and threatened or endangered species (Handbook H-3120-1).

Once the Field Offices completed the interdisciplinary parcel review (IDPR), the BLM determined that preparation of an EA was necessary for considering the public nominated parcels for the lease sale. This EA and an unsigned FONSI are made available to the public, along with the list of available parcels and stipulations and notices, for a 30-day public comment period on the BLM's NEPA Register (also known as ePlanning).⁷ The UTSO Oil and Gas Leasing webpage is also updated and maintained for the lease sale.⁸ Additional information regarding the BLM's leasing process is also made available for public review and reference. At the end of the public comment period, the BLM analyzes and incorporates the comments, where appropriate, into the EA and/or parcel list. The final parcel list with stipulations and notices is made available to the public through a Notice of Competitive Lease Sale (NCLS), which starts a 10-day protest period, and includes the revised EA and unsigned FONSI. If any changes to the parcels or stipulations/notices result from the protests, an erratum to the NCLS would be posted to the BLM website and on the NEPA Register to notify the public of the change, prior to the lease sale. The parcels would be available for sale at an online auction held by the BLM, tentatively scheduled for September 29, 2020.

If the parcel is not purchased at the lease sale through the competitive bidding process, it may still be leased non-competitively within two years after the initial offering at the minimum bid cost. Parcels obtained non-competitively may be re-parceled by combining or deleting other previously offered lands. Mineral estate that is not leased within a two-year period after an initial offering will no longer be

⁷ The NEPA Register is a BLM environmental information internet site and can be accessed online at: <https://eplanning.blm.gov/eplanning-ui/home>.

⁸ UTSO Oil and Gas Leasing program webpage can be accessed at: <http://go.usa.gov/xXk8c>

available and must go through another separate competitive lease sale process prior to being leased. An issued lease may be held for ten years, after which the lease expires unless oil or gas is produced in paying quantities (43 CFR 3107.2).⁹ A producing lease can be held indefinitely by economic production.

Once the 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, subject to non-discretionary statutes, the standard lease terms and lease stipulations. Even if no restrictions are attached to the lease, the 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.

Despite conveying the right to develop the oil and gas resources, the act of leasing does not authorize any development or use of the surface of leased lands without further application by the operator and approval by the BLM. In the future, operators 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.¹⁰ An APD may only be approved when an operator complies with any stipulations attached to the standard lease form. If an APD is received, the BLM would conduct additional site-specific NEPA analysis and consider the lease notices before deciding whether to approve the APD, and what conditions of approval (COA) should apply.

Following BLM's approval of an APD, a lessee may produce oil and gas from the well in a manner approved by the BLM in the APD or in subsequent sundry notices. The operator must notify the appropriate BLM authorized officer 48 hours before starting any surface disturbing activity approved in the APD.

1.4 Purpose and Need

The purpose of this action is for the UTSO to consider offering for oil and gas leasing parcels that the preliminary reviews have indicated are suitable for oil and gas development. The need for the Proposed Action is established by the BLM's mandates under the Acts discussed in Section 1.2, as well as the Mining and Minerals Policy Act of 1970, as amended.

1.5 Decision to be Made

Following the completion of the NEPA process the BLM would determine whether or not to offer to lease the nominated parcels and, if so, under what lease terms and conditions (stipulations and/or notices). In order to make an informed decision, the BLM is using this EA to identify the environmental impacts of the Proposed Action and its alternatives.

1.6 Plan Conformance Review

Under FLPMA, the BLM must manage for multiple uses of public lands in a combination that will best meet the present and future needs of the public and their various resources based on an approved land use

⁹ Unless the lease is within an Operating Unit and the Unit is held by production of wells on other leases within the Unit.

¹⁰ Additional Information regarding the BLM's oil and gas management program can be accessed online at: <https://www.blm.gov/programs/energy-and-minerals/oil-and-gas/>

plan or resource management plan (RMP). For split-estate lands where the mineral estate is an interest owned by the United States, the BLM has no authority over use of the surface by the surface owner; however, the BLM is required to declare in the RMP how the federal mineral estate will be managed, including identification of all appropriate lease stipulations (43 Code of Federal Regulations [CFR] 3101.1 and 43 CFR 1601.0-7(b); BLM Manual 1601.09 and Handbook H-1624-1).

All nominated lease parcels fall within areas open to leasing under the RMPs indicated above, as amended. Lease parcels, lease parcel surface ownership, lease parcel legal descriptions and total acreage, and lease stipulations and notices that apply are detailed in Appendix A. The alternatives described in Chapter 2 of this EA are in conformance with the following Land Use Plans, as amended.

Agreements:

- MOU Among the United States Department of Agriculture, the United States Department of Interior and the United States Environmental Protection Agency Regarding Air Quality Analysis and Mitigation for Federal Oil and Gas Decisions through the NEPA Process (2011)

Vernal Field Office RMP, October 2008, as amended (BLM 2008)

The RMP designated approximately 1,727,200 acres of federal mineral estate open for continued oil and gas development and leasing (see RMP decisions Min 6 to Min 14 on pages 98 through 99). The RMP (with associated amendments) also describes specific stipulations that would be attached to new leases offered in certain areas. Under the Proposed Action, parcels to be offered would be leased subject to stipulations prescribed by the RMP (see RMP Appendices K, L, and R). Therefore, the Proposed Action conforms to the fluid mineral leasing decisions in the RMP and subsequent amendments, and are consistent with the RMP's goals and objectives for natural and cultural resources. It is also consistent with RMP decisions and their corresponding goals and objectives related to the management of (including but not limited to) air quality, cultural resources, recreation, riparian, soils, water, vegetation, fish & wildlife, and Areas of Critical Environmental Concern (ACEC).

Price Field Office RMP, October 2008, as amended (BLM 2008)

The RMP designated approximately 1,910,000 acres of federal mineral estate open for continued oil and gas development and leasing. The RMP (with associated amendments) also describes specific stipulations that would be attached to new leases offered in certain areas. Under the Proposed Action, parcels to be offered would be leased subject to stipulations prescribed by the RMP. Therefore, the Proposed Action conforms to the fluid mineral leasing decisions in the RMP and subsequent amendments, and are consistent with the RMP's goals and objectives for natural and cultural resources.

Fillmore House Range Resource Area Resource Management Plan (BLM 1989)

Record of Decision (ROD) and Rangeland Program Summary for the House Range Resource Area Resource Management Plan (RMP). The ROD is augmented by the DR prepared for the House Range Resource Area RMP Oil and Gas Leasing Implementation Environmental Assessment (UT-050-89-025) and the 2009 DR prepared for the EA for Oil and Gas Leasing in the Fillmore Field Office (BLM 2009). The RMP (with associated amendments and plan maintenance) also describes specific stipulations that would be attached to new leases offered in certain areas. Under the Proposed Action, parcels offered would be leased subject to stipulations prescribed by the RMP.

Richfield Field Office RMP, October 2008, as amended (BLM 2008)

The RMP designated approximately 1.7 million acres of federal mineral estate open for continued oil and gas development and leasing (see RMP decisions Min 1 to Min 11 on pages 135 through 136). Approximately 608,700 acres are open to oil and gas leasing, subject to standard terms, 715,800 acres will be subject to CSU/TL, 551,620 acres are subject to NSO, approximately 447,300 acres are closed to oil and gas leasing (RMP page 17). The RMP (with associated amendments) also describes specific stipulations that would be attached to new leases offered in certain areas. Under the Proposed Action, parcels would be leased subject to stipulations prescribed by the RMP (see RMP Appendix 11, 12, 14, and 15). Therefore, the Proposed Action conforms to the fluid mineral leasing decisions in the RMP and subsequent amendments, and are consistent with the RMP's goals and objectives for natural and cultural resources. It is also consistent with RMP decisions and their corresponding goals and objectives related to the management of (including but not limited to) air quality, cultural resources, recreation, riparian, soils, water, vegetation, fish & wildlife, and Areas of Critical Environmental Concern (ACEC).

1.7 Other Planning and NEPA Documents

NEPA documents and relevant studies that are applicable to this analysis include:

- 2020 June Oil and Gas Competitive Lease Sale DOI-BLM-UT-0000-2020-0002-EA (BLM 2020)
- 2008 Vernal Field Office Proposed RMP/FEIS (BLM 2008)
- 2016 Monument Butte Oil and Gas Development Project EIS (BLM 2016)
- 2017 Vernal Field Office Invasive Plant Management Plan (BLM-UT-G010-2016-011-EA) (BLM 2017)
- 2008 Price Field Office Proposed RMP/FEIS (BLM 2008)
- 1989 Final Environmental Impact Statement and Proposed Resource Management Plan for the House Range Resource Area (BLM 1989)
- 1989 BLM, House Range Resource Area RMP Oil and Gas Leasing Implementation EA (BLM 1989)
- 2009 EA for Oil and Gas Leasing in the Fillmore Field Office (BLM 2009)
- 2008 Richfield Field Office Proposed RMP/FEIS (BLM 2008)

In order to reduce redundant paperwork and analysis in the NEPA process (*See* 40 CFR 1502.20 and 1502.21) the previous documents and their associated information or analysis are hereby incorporated by reference.

1.8 Relationship to Relevant Laws, Regulations, Policies and Other Plans

The mandate of the BLM as derived from various laws, including the MLA and the Federal Land Policy and Management Act of 1976 (FLPMA), as amended, to promote the exploration and development of oil and gas on the public domain. Additionally, the Federal Onshore Oil and Gas Leasing Reform Act of 1987 states lease sales shall be held for each State where eligible lands are available at least quarterly and more frequently if the Secretary of the Interior determines such sales are necessary.

Purchasers of oil and gas lease parcels are required to comply with all applicable federal, state, and local laws and regulations, including obtaining all necessary permits prior to any lease development activities. Stipulations attached to the lease, restrictions deriving from specific, nondiscretionary statutes, and such

reasonable measures may be required to minimize adverse impacts to other resource values (43 CFR 3101.1-2).

The regulations, policies, and plans utilized in preparing this EA include, but are not limited to the following:

- 43 CFR 3100 – Oil and Gas Leasing
- BLM Manual 3120 – Competitive Leasing
- BLM Competitive Leasing Handbook (H-3120-1)
- Directional Drilling into Federal Mineral Estate from Well Pads on Non-Federal Locations (WO IM 2018-014)
- Oil and Gas Leasing Program NEPA Procedures Pursuant to Leasing Reform (UT IM 2014-006)
- Protection of Ground Water Associated with Oil and Gas Leasing, Exploration and Development (BLM UT IM 2010–055)
- April 2020 Memorandum from Utah Deputy State Director, Lands and Minerals regarding Preliminary List of Lands for Consideration in the September 2020 Competitive Oil and Gas Lease Sale
- December 2019 Memorandum from Utah Deputy State Director, Lands and Minerals regarding Preliminary List of Lands for Consideration in the June 2020 Competitive Oil and Gas Lease Sale
- The Utah Oil and Gas Conservation Act (1955)
- The Utah Oil and Gas Conservation General Rules
- The State of Utah Resource Management Plan (State of Utah 2018)
- Inventory of Onshore Federal Oil and Natural Gas Resources and Restrictions to Their Development 2008 Phase III Inventory-Onshore United States
- June 2020 Lease Sale Cultural Resources Report (Utah SHPO Case No.20-1060) (BLM 2020)
- September 2020 Lease Sale Cultural Resources Report (Utah SHPO Case No. 20-2573) (BLM 2020)

1.9 Issues Identified

Identification of issues, concerns, and potential impacts that require detailed analysis was accomplished through internal review/discussion. The UTSO sent letters/ memorandum to the following stakeholders: the National Park Service (NPS), the United States Fish and Wildlife Service (USFWS), the United States Forest Service (USFS), the State of Utah’s Public Lands Policy Coordination Office (PLPCO), Division of Wildlife Resources (UDWR), and the School and Institutional Trust Lands Administration (SITLA) to notify them of the pending lease sale, and solicit comments and concerns on the preliminary parcel list. The BLM also provided GIS shapefiles depicting the proposed sale parcels to contacts within the NPS and UDWR. Consultation and coordination efforts are summarized in Chapter 4.¹¹

¹¹ The UTSO received the June 2020 lease sale parcel nomination list on December 17, 2019. Internal scoping was initiated on December 30, 2019 when the nominated lease parcels for the September 2020 competitive oil and gas lease sale were presented to the Interdisciplinary (ID) Team. Resource specialists on the ID teams helped identify the following issues through coordination, and meetings. The attached IDPR Checklists, Appendix D – Interdisciplinary Parcel Review Team Checklist was also developed after consideration of these documents and their contents listed in section 1.6, 1.7 and Appendix E. The key issues identified through the scoping process were

The UTSO received the September 2020 lease sale parcel nomination list on March 18, 2020.

Internal scoping was initiated on April 1, 2020 when the nominated lease parcels for the September 2020 competitive oil and gas lease sale were presented to the Interdisciplinary (ID) Teams. Resource specialists on the ID teams helped identify the following issues through coordination, and meetings. The attached IDPR Checklists, Appendix D – Interdisciplinary Parcel Review Team Checklist was also developed after consideration of these documents and their contents listed in section 1.6, 1.7 and Appendix E.

The key issues identified through the scoping process were developed using the guidelines set forth in section 8.3.3 of the BLM NEPA Handbook and EA are summarized in Table 1 and Table 2 below.

Table 2. Issues Identified for Detailed Analysis

Issue	Issue Statement	Impact Indicator
Air Quality	What quantity of air pollutants would be produced based on the assumptions for analysis? How would air pollutant emissions from subsequent development of leased parcels affect air quality?	Tons per year of PM-10, PM-2.5, NO _x , SO ₂ , CO, VOCs, HAPs.
Greenhouse Gas/Climate Change	What quantity of greenhouse gas emissions (GHG) would be generated from subsequent oil and gas development of leased parcels based on the assumptions for analysis? How do these amounts compare to other sources of GHGs??	Reasonably Foreseeable Metric tons (MT) or million metric tons (MMT) per year of carbon dioxide equivalents (CO ₂ e)
Socioeconomics/ Environmental Justice	What are the potential impacts to social and economic conditions and Environmental Justice?	Income, revenue, and spending (dollars)

1.10 Issue Statement Rationale for Not Further Discussing in Detail in the EA¹²

Where resources are present but not determined to be impacted or resources are determined not to be present, a rationale for not considering them further is provided in the Interdisciplinary Parcel Review Team (IDPRT) checklist (Appendix D – Interdisciplinary Parcel Review Team Checklist), and in the external coordination as described in Chapter 4. Table 3 highlights key issues evaluated and not discussed in further detail in this EA for the resources the BLM commonly receives public comments and/or interests. The analysis within an EA must focus on significant environmental issues (40 CFR 1500.1, 43

developed using the guidelines set forth in section 8.3.3 of the BLM NEPA Handbook and have been incorporated into this EA in Table 1 and Table 2, below.

¹² Refer to the IDPRT checklist (Appendix D – Interdisciplinary Parcel Review Team Checklist) for the complete rationale for resources identified for analysis and resources not considered for further detailed analyses.

CFR 1502.2(b), 40 CFR 1502.15, 40 CFR 1501.7(a)(2), 40 CFR 1501.7(a)(3), and 40 CFR 1502.1), and have not been decided by law, regulation, or previous decisions.

Issues not included in further detail have been determined that additional analyses is not required. These issues have either been previously analyzed within a FEIS and/or EA or have Required Design Constraints/Mitigation of Impacts that are implemented by law, regulation, or previous decisions (i.e., RMP ROD, EA decision, or EIS decision). Refer to section 1.6, 1.7 and Appendix E for a complete list of applicable regulations, policies, or RMPs. Impacts to the resource have also been reduced through design features, best management practices, mitigation requirements, stipulations, and lease notices. The issues not included in further detail are described below in Table 3.

Table 3. Issues not included in Further Detail in the Environmental Assessment.

Issue	Issue Statement	Rationale for Not Further Discussing in Detail in the EA
T&E Species	What are the potential impacts to federally-listed threatened and endangered species or habitats in areas related to oil and gas development?	<p>The parcels involved in the lease sale were analyzed individually within each field office for occurrence of federally-listed species, in coordination with the USFWS.</p> <p>The Threatened and Endangered Species Act Stipulation, in accordance with 43 CFR 3101.1-2, is applied across all lease parcels, and states that if any parcel is found to contain plants, animals or their habitats determined to be threatened, endangered or special status species, the BLM may recommend modifications to exploration and development proposals to further its conservation and management objective. Under this stipulation, the BLM may also 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 destruction or adverse modification of a designated or proposed critical habitat.</p> <p>Stipulations attached to the lease, restrictions deriving from specific, nondiscretionary statues, and such reasonable measures may be required to minimize adverse impacts to other resource values (43 CFR 3101.1-2).</p> <p>As appropriate, BLM attaches stipulations or notices to the lease which give notice to the lessor/operator of potential for occurrence of federally-listed species, and measures that may be required to mitigate impacts. The BLM will not approve any ground-disturbing activity that may affect any such species or critical habitat 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.</p>
Sensitive Species (Wildlife and Plants)	What are the potential impacts to sensitive species (wildlife and plants) or their habitats from oil and gas development?	<p>The Federal Land Policy and Management Act of 1976, Section 102.8, requires environmental resources to be managed to provide food and habitat for fish and wildlife. The Sikes Act instructs agencies to develop, maintain, and coordinate programs for the conservation and rehabilitation of wildlife, fish and game (16 U.S.C. 670<i>et seq.</i>, section 670h). The DOI Manual 632 and BLM Manual 6840 requires conservation of special status species and the ecosystems upon which they depend on BLM-administered lands. BLM special status species are those listed or proposed for listing under the ESA, and species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA. Instructional Memorandum No. UT IM-2019-005 provides the plant and wildlife Species lists for BLM-administered public lands in Utah and these species have been evaluated for</p>

Issue	Issue Statement	Rationale for Not Further Discussing in Detail in the EA
		<p>potential impacts from the proposed lease sale, as documented by the checklist found in Appendix D of this EA.</p> <p>The Utah BLM has several lease notices that protect sensitive species statewide (see UT-LN-49 Utah Sensitive Species in Appendix A of this document) or on a species-specific basis (for example, see UT-LN-89 (Horseshoe Milkvetch (<i>Astragalus Equisolensis</i>)). For the lease sale, the BLM analysis of potential for impacts to sensitive wildlife and plants or their habitat, and determined that application of the UT-LN-49: Utah Sensitive Species to all parcels in the sale will notify the lessee/operator 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, and that modifications to the Surface Use Plan of Operations may be required to protect these resources from surface disturbing activities. In addition, due to potential for listed plant species, the implementation of T&E-05: Listed Plant Species will add an additional layer of protection.</p> <p>Specific parcels have been identified as having occurrence, or potential occurrence of several species of plants or animals that may require modification of surface use plans to avoid disruptive or harmful activities. In addition, multiple parcels contained sensitive habitat for game species such as elk, mule deer or pronghorn antelope. Lease notices specified by parcel in Appendices A and D of this EA identify those species to make the operator aware of possible additional action. Justification for stipulations and lease notices applied by parcel is discussed in detail in Appendix D of this EA.</p> <p>Leasing of the proposed leases would not, by itself, authorize any ground disturbance; however, the proposed lease sale has the potential to impact habitat through future oil and gas development. Although site-specific effects cannot be analyzed until an exploration or development application is received, attachments of stipulations and notices to leases will assure the opportunity to make adjustments, such as design modifications, at the site specific level when an Application for Permit to Drill is received, to address specific wildlife and plant resources.</p>
Migratory Birds	What are the potential impacts to migratory birds from oil and gas development?	The Migratory Bird Treaty Act (MBTA) protects migratory birds; Instructional Memorandum No. 2008-050 requires the BLM to address the potential effects of the projects on migratory bird populations and their habitat, and implement best management practices to avoid or minimize the possibility of impacts, through such measures as timing limitations during nesting seasons, surveys for bird nests, and monitoring (https://www.blm.gov/policy/im-2008-050).

Issue	Issue Statement	Rationale for Not Further Discussing in Detail in the EA
		<p>The Utah BLM has several lease notices that implement this policy during lease sales, ranging from those applied statewide (UT-LN-45: Migratory Birds, found in Appendix B of this document) to more narrow groups of taxa (see UT-LN-43 Raptors). In addition, several migratory birds have been designated as BLM Sensitive Species, and these may have additional protections through notices to potential buyers of potential for occurrence on a given parcel (see UT-LN-49).</p> <p>For the lease sale, the BLM analysis of potential for occurrence indicated that application of the following lease notices was appropriate for every parcel in the sale, UT-LN-43 Raptors, and UT-LN-45: Migratory Birds.</p> <p>UT-LN-43 provides that raptor habitat exists in a given parcel, and that surveys will be required to identify any nesting birds. UT-LN-45 gives prospective buyers 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. Based on these surveys, buffers and timing limitations may be applied. In combination these lease notices provide mitigation measures which will mitigate impacts to migratory birds, by allowing the opportunity to make adjustments, such as design modifications, at the site-specific level when an Application for Permit to Drill is received.</p>
Paleontology	What are the potential impacts on the integrity of paleontological resources associated with oil and gas disturbance?	Fossils uncovered during ground disturbing activities would be protected owing to the standard discovery requirements. Additionally, should a parcel be located in an area that has high potential for paleontological resources, COAs would be applied at the APD stage. The proponent may be required to do pre-construction surveys and/or have a paleontologist onsite for any surface disturbing activities. The proponent is required to notify the BLM of any discoveries they come across during construction following the APD stage.
National Historic Trails/Units of the National Park Service	What are the potential impacts to the Old Spanish Trail and resources within Arches, and	<p>Several parcels in the RFO are proximate to the Old Spanish Trail. The two segments of the trail close to these parcels are not high potential and their setting is not protected beyond the VRM designation of the surrounding BLM lands.</p> <p>The analysis of impacts to the Muleshoe Loop of the Old Spanish Trail is incorporated by reference from the analysis of impacts to the Green River Gap in the September 2019 MbFO Oil and Gas Leasing EA</p>

Issue	Issue Statement	Rationale for Not Further Discussing in Detail in the EA
	Canyonlands National Parks?	<p>DOI-BLM-UT-0000-2019-0003-OTHER_NEPA-MbFO-EA pages 38-40. The analysis indicated that development might impair the visitor experience of the loop through palpable noise and visual impact. Lease Notice UT-LN-162 - <i>Highly Valued Settings and Scenic Landscapes (National Historic Trails and/or Units of the National Park Service)</i> developed in that EA is attached to parcel 136.</p> <p>The Moab parcels have been deferred. The NPS was a cooperating agency in the preparation of the EIS for the Moab Master Leasing Plan; impacts to Park Resources and the Old Spanish Trail were identified and areas were closed to leasing, or designated no surface occupancy to mitigate the impacts.</p>
Cultural Resources	What are the potential impacts from ground disturbing oil and gas activities on cultural resources?	<p>The BLM has conducted literature searches for both the previous June 2020 sale parcels and the additional parcels nominated for the September 2020 sale using survey and site information from the CURES geodatabase, SEGO database, Utah DAM, General Land Office maps, and Field Office records to identify currently known sites within the lease parcels, and to determine whether these sites could be avoided or mitigated through standard archaeological practices at the APD stage (BLM 2020, BLM 2020).</p> <p>The Cultural Resources and Tribal Consultation Stipulation (H 3120-1) is applied across all lease parcels. Stipulations attached to the lease, restrictions deriving from specific, nondiscretionary statutes, and such reasonable measures may be required to minimize adverse impacts to other resource values (43 CFR 3101.1-2).</p> <p>This stipulation states that the lease area 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, Executive Order 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 (e.g., State Historic Preservation Officer (SHPO) and tribal consultation) under applicable requirements of the NHPA and other authorities.</p> <p>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.</p> <p>Prior to approving APDs on Federal surface or split-estate lands, additional site specific NHPA analysis is required, including appropriate identification and consultation efforts.</p>

Issue	Issue Statement	Rationale for Not Further Discussing in Detail in the EA
Riparian/ Wetlands/ Floodplains	What are the potential impacts from oil and gas exploration and development ground disturbing activities on riparian, wetlands, and floodplains?	<p>Resource Management plans for each office affected by the lease sale analyzed the effects of leasing and developing oil and gas resources on water resources and associated features. Leasing of parcels would not directly affect these resources. Current regulations such as Onshore Order #1, Onshore Order #2, Onshore Order #7, 43 CFR 3162.3-3, section 404 of the 1972 Clean Water Act as amended, and 1974 Safe Drinking Water Act as amended, 1968 Floodplain Regulation Act as amended provide additional protection to water resources. BMPs, SOPs, and site-specific mitigation may be applied at the APD stage as COAs. Applying the following stipulations to parcels as needed will minimize potential impacts to wetland and riparian resources.</p> <p>UT-LN-53— Riparian Areas states no surface use or otherwise disruptive activity allowed within 100 meters of riparian areas.</p> <p>UT-S-386—NSO: Water Resources mandates no surface occupancy within 100-year floodplains, and within 500 feet of intermittent and perennial streams, rivers, riparian area, wetlands, water wells, and springs.</p> <p>UT-S-387—NSO: Ephemeral Streams and states no surface occupancy allowed within 100 feet of ephemeral streams.</p> <p>UT-LN-128— Floodplains Management mandates avoiding adverse impacts to floodplains.</p> <p>With these stipulations and other site-specific mitigation practices, no additional analysis is required in this EA. Additional mitigation measures and buffers would be applied as necessary to protect these areas at the APD stage as these areas are identified in further detail.</p>
Hydrology/ Surface and Groundwater Resources	What are the potential impacts from oil and gas exploration and development ground disturbing activities on hydrology and hydrogeology?	<p>Potential site-specific impacts relating to future authorizations will be reviewed and possibly analyzed in detailed when an APD is received. Prior to approving an APD, Hydrologic and Engineering reviews would be conducted on all proposed down-hole activities, including hydraulic fracturing (if proposed). All appropriate regulatory and mitigation measures would be included in the approved APDs and all potential impacts would be identified and addressed during the site-specific NEPA process.</p> <p><u>Groundwater</u> :</p> <p>Groundwater quality protection for oil and gas leasing, exploration and development is outlined in Instruction Memorandum (IM) No. UT 2010-055: Protection of Ground Water Associated with Oil and Gas Leasing, Exploration and Development- Utah BLM. The purpose of this IM is to clarify the process for the protection of usable ground water zones ($\leq 10,000$ mg/L as defined in Onshore Oil and Gas Order</p>

Issue	Issue Statement	Rationale for Not Further Discussing in Detail in the EA
		<p>No. 2) associated with oil and gas exploration and development activities. All potential usable water aquifers would be cased and cemented. Well casings would be pressure tested to ensure integrity. This would eliminate the intermixing of ground water encountered from various aquifers encountered during the drilling process.</p> <p>The lease parcels have been reviewed for proximity or overlapping Sole Source Aquifers or Public Drinking Water Source Protection Zones as defined by the EPA and State of Utah Drinking Water Division. All of the parcels are not within these aquifers or zones. Additional information and its applicability to potential impacts is provided in the Water Resources section in this document.</p> <p>The requirements for oil and gas drilling operations are described in Onshore Oil and Gas Order (OO) No. 2 and the requirements for disposal of produced water from oil and gas activities are contained in OO No. 7. Adherence to these regulatory requirements will adequately mitigate impacts from the Proposed Action to groundwater resources. Specific to groundwater protection, OO No.2 requires that the proposed casing, cementing and abandonment programs shall be conducted as approved to protect and/or isolate all usable water zones and requires pressure testing the casing string. Known water bearing zones would be protected by drilling requirements and, with proper practices, contamination of ground water resources is highly unlikely. As a result, groundwater resources would not be impacted to the degree that would require detailed analysis in the EA.</p> <p><u>Surface water:</u> The lessee/operator would submit an APD when oil and gas exploration and development activities are proposed. The APD would be subject to site specific NEPA review and analysis. An approved APD is subject to standard operation procedures (SOP) required by regulation, stipulations attached to the lease, best management practices (BMP) included in the APD submission, and conditions of approval (COA) developed during the NEPA analysis and documentation process. These SOPs, BMPs and COAs mitigate impacts to water resources from oil and gas exploration and development activities. Standard operating procedures including interim and final reclamation are required and site specific APD approvals would provide mitigation for potential direct and indirect impacts to surface water quality.</p> <p>To protect water resources BLM proposes to apply the following stipulations and lease notices as needed:</p>

Issue	Issue Statement	Rationale for Not Further Discussing in Detail in the EA
		<p>Stipulation UT-S-128, UT-S-386, UT-S-387, UT-LN-128 and UT-LN-53.</p> <p>The SOPs, BMPs, COAs and stipulations will adequately mitigate impacts from the Proposed Action to surface water resources. Surface water resources will not be impacted to the degree that will require detailed analysis in the EA.</p>

1.11 Public Comment Period

The parcels from the June Competitive Lease Sale were subject to a 30-day public comment period which was held from February 25, 2020 through March 26, 2020. The BLM received six comments on the lease sale (refer to section Appendix I). All parcels in this preliminary EA and the unsigned FONSI are subject to a 30-day public comment period, which was held from June 9, 2020 through July 9, 2020. (Appendix I – Comments and Responses). A 10-day protest period will be held from August 11, 2020 to August 21, 2020.

The BLM received 372 comments on the lease sale (refer to section 4.3).

Chapter 2 Description of Alternatives

2.1 Introduction

This EA addresses two alternatives (Alternative A – Proposed Action and Alternative B – No Action, No Leasing).

The nature of leasing is that offering each parcel, or portion of a parcel, is a separate action. As such the Proposed Action alternative comprises a multitude of alternatives that precludes the need for additional action alternatives. The No Action alternative is considered and analyzed to provide a baseline for comparison of the impacts of the Proposed Action.

2.2 Analysis Assumptions

Reasonably Foreseeable Development Scenario

The Reasonably Foreseeable Development Scenario (RFDS) is a planning tool to provide a reasonable estimate of what oil and gas exploration and development activities might be proposed, should a decision be made to lease the area. The RFDS is a 15-20-year forward-looking estimation of oil and gas exploration and development that is exclusive of other concerns that might compete for use of land in a multiple-use scenario.

Although at this time the BLM does not know 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.

When and if an APD is submitted for any of the leases, BLM would adhere to numerous IMs (as revised through the life of an active lease) including specific instructions for directional drilling, split estate, bonding, and other laws (such as NHPA, ESA). Some of these IMs include:

- Approval of Notice of Intent to Conduct Geophysical Exploration to Federal Oil and Gas Lessee on Split Estate (WO IM 2009-121)
- Cultural Resources Requirements for Split Estate Oil & Gas Development (WO IM-2009-027)
- Split Estate Report to Congress--Implementation of Fluid Mineral Leasing and Land Use Planning Recommendations (WO IM 2007-165)
- Permitting Oil & Gas on Split Estate Lands (WO IM 2003-131)
- Legal Responsibilities on Split Estate Lands (WO IM 1989-201)
- Directional Drilling into Federal Mineral Estate from Well Pads on Non-Federal Locations (WO IM 2018-014).

Management provisions would adhere to the Gold Book best management practices (United States Department of the Interior and United States Department of Agriculture 2007). In general, activities are anticipated to take place as described in Appendix G – Reasonably Foreseeable Development of Leases Scenario. This appendix provides a general discussion of possible post-leasing RFDS activities. All of these activities would require additional NEPA review when a lease holder submits an APD.

Assumption for Analysis in this EA

The act of leasing acres in and of itself would have no direct impacts on resources in the field office(s).

However, for the purposes of this analysis, a development assumption is used based on the RFDS(s) or field development plans if the parcel is within or adjacent to a plan boundary. Some parcels may be assumed to have one or more wells drilled, while the remaining parcels may be assumed to have fewer than one well per parcel drilled.¹³ However, each parcel is reviewed to determine whether some level of development could occur without violating laws intended to protect the environment, or other resource conflicts would preclude development.

The BLM has deferred 54 parcels after the public comment period closed. The analysis in the EA for section 3.3 have not been updated to reflect this change. The analysis for air quality, greenhouse gases socioeconomics and environmental justice is still based on 77 nominated parcels covering 97,737 acres and includes the analysis for the MbFO parcels (which all have been removed and will not be included in the NCLS).

Table 4 Assumptions for Analysis for the Nominated Parcels

Field Office	Nominated Parcels	Nominated Acres	Wells	Surface Disturbance (acreage)
Vernal	2	1,440.00	0	0
Price	3	1,990.00	2	16.4
Moab¹⁴	49	82,010.41	20	164
Moab (June)¹⁵	4	4,376.50	4	32.8
Fillmore	2	1,931.88	1	5
Richfield	17	22,300.98	14	60
Total:	77	114,050	41	279

¹³ The United States Government Accountability Office (GAO) completed a detailed data review of approximately 47,925 federal onshore oil and gas leases issued from 1987 through 1996 (GAO 2008). The GAO found that only 6 percent (2,904 leases) of the leases issued were drilled during the 10-year lease term, and about 5 percent (2,386 leases) of the leases produced oil and gas by 2007.

BLM Utah issued 10.7 percent (5,127) of the total federal onshore oil and gas leases (47,925) analyzed in the GAO report. Of those leases in Utah, 6.17 percent (1,556) were drilled and 3.76 percent produced [refer to Table 4 in (GAO 2008)]. Over a five year period between 2014 and 2018, on average only 58% of approved APDs (federal and non-federal) across Utah were developed (UDOGM 2019).

¹⁴ All 53 parcels located within the Moab Field Office have been deferred and will not be included on the NCLS or in the September Lease Sale. The analysis in the EA for section 3.3 has not been updated to reflect this change. Table 4 was also not modified. The analysis for GHG, and air quality is based on the development potential of 41 wells. Socioeconomics and environmental justice analysis is based on the 77 parcels encompassing 114,050 acres.

¹⁵ The four June parcels are located within the MbFO and were deferred. The June parcels have been renumbered. Parcel 001 is now 133, parcel 002 is now 134, parcel 013 is now 135 and parcel 014 is now parcel 136 in this EA.

Canyon Country District
Moab Field Office¹⁶

Over a four-year period from 2016 to 2019, including federal and non-federal lands, 43 percent of APDs received in Grand County were drilled (8 wells; 14 APDs), and 35 percent of APDs received in San Juan County were drilled (6 wells; 17 APDs) (UDOGM 2019). The parcels located in the Moab Field Office are considered low to moderate potential for development.

The Moab Field Office Reasonably Foreseeable Development Scenario for Oil and Gas in the Moab Master Leasing Plan Area (BLM 2012), Canyon Country District, and the Moab Field Office RMP RFD (BLM 2005) are the basis for the assumption of analysis for these parcels. Fifty parcels¹⁷ encompassing 78,790.85 acres are within the MLP, and are located within the Salt Wash-Big Flat development area. Sixteen parcels comprising of 25,388.73 acres are completely in the MLP area, located in Hatch Point development area. For wells located in the MLP Hatch Point, it is projected that an average of 3 wells per year would be drilled over the entire RFDS 15 year period totaling 45 wells (BLM 2012). The average disturbance for a well is approximately 8.2 acres. There has been a combined total of 50 wells drilled in the Salt Wash-Big Flat and Hatch Point areas drilling the past 30 years. This is an average of 1.7 wells per year or 5 wells every 3 years. Since 2007, 23 wells out of 27 wells were drilled with the Salt Wash-Big Flat and Hatch Point Areas. This gives a 6-year combined average for these two areas of nearly 4 wells per year. The Moab MLP area contains 783,381 acres. The proposed action to offer 50 parcels within the Salt Wash-Big Flat would compose of 0.25 percent of the total BLM acreage. For the purpose of this analysis it is assumed that 50 nominated parcels encompassing 78,790.85 acres will result in 14 wells and 114.8 acres (one well pad and access road disturbance at 8.2 acres). The proposed action to offer 16 parcels within the Hatch Point would compose of 0.12 percent of the total BLM acreage. For the purpose of this analysis it is assumed that the 52 nominated parcels encompassing will result in 23 wells and 188.6 acres (one well pad and access road disturbance at 8.2 acres).

The 2005 RFDS to the MFO RMP projected that an average of about 26 wells per year for a total of about 390 wells over the next 15 years in the Book Cliffs (3-15 wells per year), Greater Cisco (3-10 wells per year), Roan Cliffs (0-1 wells per year), Salt Wash (0-2 wells per year), Big Flat-Hatch Point (3-5 wells per year), Lisbon Valley (2-4 wells per year), and Eastern Paradox (1-3 wells per year) development areas (BLM 2005). These projections provide a range of potential drilling activity, and are not thresholds for drilling activity. It is recognized that there would be some years with little to no drilling (<12 to 0 wells), and other years that may exceed 26 wells. However, it is estimated that only 50 percent of the wells drilled in Moab would be capable of production and the remaining 50 percent would be plugged, abandoned, and reclaimed. The average disturbance for a well is approximately 8.2 acres. The proposed

¹⁶ All of the MbFO parcels have been deferred. Parcels 136, and 135 were previously leased. Acreages within parcel 135 were previously held by one lease UTU087191 (2009-2019), and acreages within parcel 136 were previously held by lease UTU087185 (2009-2019). No development occurred during the 10-year primary lease term for any of these leases.

¹⁷ This is the number of wells prior to the deferral of some parcels and addition of others, and is no longer an exact number. However, the analysis is still valid since any indirect impacts would be slightly overestimated, and there is no difference in the cumulative impact.

action to offer for lease would compose of 0.3 percent of the total BLM acreage. The RMP RFD area contains 1,241,936 acres. For the purposes of this analysis it is assumed that one nominated parcel outside the MLP encompassing 2,440.64 acres will result in one well and 8.2 acres of disturbance (one well pad and access road disturbance at 8.2 acres).

Richfield Field Office

The RFO RMP (BLM 2005), predicted a high development potential and the development during 2010-2020 also indicates that the subsurface is complex comprising of a series of thrust faults, faults and folds, thus resulting also in a high-probability of dry holes. A total of 454 wells with a total disturbance of 3,080 acres was estimated to be drilled within 15 years. Only one known field in the planning area exists at this time, and many of the future wells will be exploratory in nature. The planning area has been divided into four geographic areas, defined by USGS plays and assessment units. These are (1) the eastern portion of Wayne and Garfield counties (generally east of R. 12 E.), which is underlain by true Paradox Basin plays (USGS-2101, USGS-2102, USGS-2103, and USGS-2105); (2) the southern part of the planning area, as defined by the Permo-Triassic Unconformity Play (USGS-2106); (3) the Wasatch Plateau, defined by the Cretaceous Sandstone Play (USGS-2107), but also including CBNG in the Ferron, Emery, and Blackhawk coals; and (4) the area from the eastern boundary of the Sevier Frontal Zone Play (USGS-1907) to the western boundary of the planning area. Eleven parcels encompassing 18,996.21 acres are within areas 1 and 2, one parcel encompassing 560 acres is within area 3, and 11 parcels encompassing 14,088.43 within area 4. Historically, parcels located in areas 1, 2, and 4 are capable of having production and may receive an APD during the primary lease term. For the analysis of the 17 wells encompassing, 33,644.64 acres, it is estimated there would be a maximum of 14 wells drilled, and the maximum new disturbance will total 60 acres.

Green River District Vernal Field Office

Parcel 035 is within the “Scylla” Unit. As long as the Unit remains in effect, if the lease is issued no development would be required to hold it. Given its location, which has seen little development, it is anticipated that development of the lease would be too far in the future to be reasonably foreseeable. Parcel 050 is not within a Unit, and unless it is included in one within 10 years of a lease being issued, at least one producing well would have to be drilled to hold the lease. However, the impacts of development of both parcels was disclosed in the 2016 Monument Butte Oil and Gas Development Project EIS, so no further analysis is needed for indirect impacts or cumulative is needed. No wells will be included in the analysis assumption. A revised cumulative impact analysis for GHG/Climate Change is included in this document which updates the analysis wherein for that issue. Parcel 035 is within the ozone nonattainment area and the BLM preformed a general conformity applicability review. The review shows that conformity for the leasing action is not applicable. However, conformity will be required when a lessee submits a plan to develop the parcels.

Price Field Office

Appendix M in the Price RMP (BLM 2008), predicted a moderate potential for oil and gas for parcels 031, 033, and 030 (Richfield) and no occurrence potential for 034 (Map 3-20 in the RMP). Parcels 031, and 033 are within the Ferron Fairway. However, there has been no production south of Ferron, Utah and activity in the Ferron Fairway is geologically and geographically limited. Some areas are not being

developed for oil and gas because of conflicts with coal development or issues with disposal of produced water. Parcels 031, 033, and 034 would be exploratory. Oil and gas drilling has declined and is unlikely to return to the activity levels of 1999-2001 due to field maturity and decreases in natural gas prices. Development of the oil and gas fields has matured to the point where lower drilling rates will likely continue in the future. For the analysis of the four (4) nominated parcels encompassing 3,793.21 acres, it is estimated a maximum of 2 wells would be drilled, and the maximum new disturbance will be 2 wells totaling 16.4 acres (one well pad [6.4 acres] and access road disturbance [1.8 acres] at 8.2 acres). These scenarios would occur rarely, if at all, since there has been no drilling activity over the last 4 years in this area. Statistically, it is more probable that a maximum of one well would be drilled for the nominated PFO parcels.

West Desert District

Fillmore Field Office

In 2009, a DR was signed for the *Oil and Gas Leasing in the Fillmore Field Office* EA (BLM 2009), which provided updated analysis of the impacts of leasing within the FFO. The reasonably foreseeable development (RFD) scenario in the 2009 Leasing EA (page 52) anticipated one well per year would be drilled within the Field Office. The RFD in the 2009 Leasing EA is still valid. Since it was prepared, only one well has been drilled within the FFO. None of the wells drilled to date have produced, and there has not been any production in Juab County.

For the analysis of the FFO parcels in the Proposed Action, a maximum of one well to be drilled as a result of the acres associated in the lease sale. The maximum new disturbance will be one well totaling 5 acres (well pad [4 acres] and access road disturbance [1 acre]). Since the parcels are located in the 2008 Inventory of Onshore Federal Oil and Natural Gas Resources and Restrictions to Their Development (BLM, USGS, USFS, DOE, and EIA. 2008) low oil and gas densities, these scenarios would occur rarely, if at all.

2.3 Alternative A – Proposed Action

The BLM would offer for lease all or part of the nominated parcels (covering 114,050 acres) in the lease sale. The leases would include the standard lease terms and conditions for development of the surface of oil and gas leases provided in 43 CFR 3100 (BLM Form 3100-11) along with all stipulations mandated by policy (such as the Competitive Leasing Handbook, H-3120-1) and by the governing Land Use Plans (LUP). Legal land descriptions along with corresponding stipulations as well as notices added to address resource issues found through review and analysis that would be attached to each parcel are located within Appendix A – Parcel List with Stipulations and Notices. All stipulations from the governing LUP(s) and necessary notices being applied to the parcels are detailed in Appendix B – Stipulations and Notices. Areas offered for oil and gas leasing would be subject to measures necessary to mitigate adverse impacts, according to the categories, terms, conditions, and stipulations identified in the land use plans, as amended. Under the Proposed Action, the BLM Authorized Officer also has the authority to selectively lease and subsequently issue leases, or to defer, in the light of the analysis of potential impacts presented in this EA.

BLM regulations at 43 CFR 3101.1-2 allow 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.

Additional measures would be applied to some leases to further protect specific resources (Appendix A and Appendix B – Stipulations and Notices). In addition to the stipulations provided for by the governing LUPs (as amended) and BLM policies, Lease Notices have been developed for conservation measures and would be applied on specific parcels as warranted by subsequent IDPRT review. The addition of prescribed notices would be applied to all leasing categories detailed in Appendix B – Stipulations and Notices.

At the leasing stage it is uncertain whether development on all leased parcels will move forward; however, for the purposes of this analysis, and in order to assess potential impacts, Reasonably Foreseeable Development (RFD) Scenario is assumed wherein all nominated parcels¹⁸ will be developed. The Reasonably Foreseeable Development used for analysis assumptions under this alternative is described in Section 2.2.

2.4 Alternative B – No Action

The No Action Alternative would not offer any of the nominated parcels in the lease sale. The parcels could be considered for inclusion in future lease sales. Surface management would remain the same and ongoing oil and gas development would continue on surrounding private, state, and existing federal leases.

2.5 Other Alternatives Considered but Not Analyzed in Detail

Other alternatives to the Proposed Action were not identified that would meet the purpose and need of the agency action. The alternatives carried forward represent those necessary for a reasoned choice (40 CFR 1502.14).

2.5.1 Removing Parcels from the Sale to Address Specific Resource Concerns

This alternative does not meet the purpose and need, because it does not allow for the consideration of all parcels. Additionally, since each parcel is an independent, though similar, action the BLM at the end of the EA process could choose to either lease or defer any parcel in the EA's decision record (see Section 1.2). The Interior Board of Land Appeals has upheld this rationale in finding that subsumed in a no action alternative is consideration of not leasing any or all parcels (Biodiversity Conservation Alliance *et al.*, 183 IBLA 97, 124 (2013)). The No Action alternative allows the authorized officer to resolve resource conflicts by deferring or removing parcels from the lease sale, before offering those parcels for sale.

2.5.2 Adding Stipulations Beyond Those Required by the Management Plan

This alternative to add additional stipulations, including closing areas to leasing, beyond those identified by the applicable Management Plan to the nominated parcels was not considered in detail because it would require a plan amendment, which is outside the scope of this EA. However, deferral of any particular parcel due to unresolved resource conflicts is within the range of alternatives considered in detail in this EA, and can be implemented at the discretion of the Authorized Officer, or as the need is identified in the NEPA analysis

¹⁸ Scenario is assumed wherein the original 77 nominated parcels will be developed. However, only 23 parcels will be listed on the NCLS and in the September Lease Sale. All the parcels nominated in the MbFO have been deferred.

Chapter 3 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 IDPRT Checklist as found in Appendix D – Interdisciplinary Parcel Review Team Checklist and introduced in Chapter 1 of this EA. Only those aspects of the affected environment related to the issues presented in Table 1 are described in detail in section 3.3 which discloses any potential direct, indirect and cumulative impacts on the resources identified as issues. Once issues are identified, impact indicators are selected to assess the impacts of alternatives and are used as a basis for future monitoring (Table 1. Issues Identified for Detailed Analysis).

The CEQ Regulations state that NEPA documents “must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail” (40 CFR 1500.1(b)). While many issues may arise during scoping, not all of the issues raised warrant analysis in an EA. Issues will be analyzed if: 1) an analysis of the issue is necessary to make a reasoned choice between alternatives; or 2) if the issue is associated with a significant direct, indirect, or cumulative impact, or where analysis is necessary to determine the significance of the impacts. To see which resources were determined to not be present or not expected to be impacted by the Proposed Action please refer to Appendix D – Interdisciplinary Parcel Review Team Checklist.

Assumptions for analysis

The act of leasing in and of itself would have no direct impacts on resources in the FFO, MbFO, PFO, RFO, and VFO. However, for the purposes of this analysis, a framework of RFD is assumed wherein all parcels under each alternative are leased and developed.

While an appropriate level of NEPA for wells or roads would occur when a leaseholder submits an APD, reasonable development assumptions for lease development will be used in the analysis of impacts in this EA to inform the decision since leasing results in a commitment of resources unless the lease is allowed to expire without development.

Cumulative impacts include the combined effect of past projects, ongoing projects, and other reasonably foreseeable future actions in the Cumulative Impact Analysis Area (CIAA) determined for each resource, over the time period remaining in the RFDS.

3.2 General Setting

The proposed action would result in additional leasing of acres in Canyon Country District, Color Country District, Green River District, and West Desert District. Utah’s State and Institutional Trust Lands Administration (SITLA) offered quarterly competitive lease sales in April, and July, and October¹⁹. The SITLA parcels may be interspersed or located in the general vicinity of the nominated lease parcels analyzed in this EA. To date, the leases from the BLM Utah’s September 2019, December 2019, and March 2020 lease sale have not been issued, and the June lease sale has been incorporated into this lease

¹⁹ Additional information regarding the SITLA can be accessed online at:
<http://sitla.maps.arcgis.com/apps/MapSeries/index.html?appid=4744407de569440b875849fa34672865>.

sale. The BLM ran a Legacy Rehost System (LR2000) report for all active leases. Refer to section 1.3 and Appendix E. Cedar City Field Office has 2 active leases, FFO has 58 active leases, MbFO has 173 active leases, Monticello Field Office has 109 active leases, PFO has 138 active leases, RFO has 62 active leases, SLFO has 30 active leases and VFO has 278 active leases.

3.3 Resources/Issues Brought Forward for Analysis²⁰

The affected environment of the proposed action and no action alternatives, and their potential environmental effects were considered and analyzed by the IDPRT as documented in the IDPRT Checklist, Appendix D – Interdisciplinary Parcel Review Team Checklist. 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 analysis. Resources which could be impacted to a level requiring further analysis are described in this chapter and impacts to these resources are analyzed below.

3.3.1 Issue 1: What quantity of air pollutants would be produced based on the assumptions for analysis? How would air pollutant emissions from subsequent development of leased parcels affect air quality?

3.3.1.1 Affected Environment

Information on air quality in the leasing area is contained in the 2020 BLM Utah Air Monitoring Report (AMR) (BLM 2020) and in each field office RMP (see Section 1.7) to which this analysis incorporates by reference. This EA summarizes technical information related to air resources affected environment.

Air Quality

The Environmental Protection Agency (EPA) has the primary responsibility for regulating air quality, including six nationally regulated ambient air pollutants including carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM₁₀ & PM_{2.5}), sulfur dioxide (SO₂) and lead (Pb). EPA has established National Ambient Air Quality Standards (NAAQS) for criteria pollutants (Section 2.2.1, AMR). The NAAQS are protective of human health and the environment. Compliance with the NAAQS is typically demonstrated by monitoring for ground-level atmospheric air pollutant concentrations. Areas where pollutant concentrations are below the NAAQS are designated as attainment or unclassifiable, and air quality is generally considered to be good. Locations where monitored pollutant concentrations are higher than the NAAQS are designated nonattainment, and air quality is considered unhealthy. Nonattainment areas in Utah have been designated in portions of the Salt Lake Field Office (primarily along the Wasatch Front) and in the Vernal Field Office (portions of Duchesne and Uintah Counties below 6,250 ft elevation) (BLM 2020).

Air pollutant concentrations are reported using design values. A design value is a statistic that describes the air quality status of a given location relative to the level of the NAAQS. Design values are used to designate and classify nonattainment areas, as well as to assess progress towards meeting the NAAQS. Design values that are representative for the airshed where parcels are located are provided in Table 4. It is assumed that counties without reported design values have good air quality and pollutant concentrations are below the NAAQS. The main pollutants of concern are O₃ and PM_{2.5} as these are the pollutants with reported design values near or above the NAAQS.

²⁰ Scenario is assumed wherein the original 77 nominated parcels will be developed.

Table 5. 2016 to 2018 Criteria Pollutant Design Values

Pollutant	Location	Averaging Time	Concentration	NAAQS
O ₃	Box Elder County	8-hour	0.069 ppm	0.070 ppm
O ₃	San Juan County ¹	8-hour	0.065 ppm	0.070 ppm
O ₃	Uintah County	8-hour	0.088 ppm	0.070 ppm
NO ₂	Box Elder County	Annual	7 ppb	53 ppb
NO ₂	Duchesne County	Annual	4 ppb	53 ppb
PM _{2.5}	Box Elder County	Annual	7.7 µg/m ³	12.0 µg/m ³
PM _{2.5}	Mesa County, CO ¹	Annual	5.9 µg/m ³	12.0 µg/m ³
PM _{2.5}	Duchesne County	Annual	6.3 µg/m ³	12.0 µg/m ³
PM _{2.5}	Box Elder County	24-hour	32 µg/m ³	35 µg/m ³
PM _{2.5}	Mesa County, CO ¹	24-hour	17 µg/m ³	35 µg/m ³
PM _{2.5}	Duchesne County	24-hour	25 µg/m ³	35 µg/m ³

¹ – Representative of the area where parcels in the Moab Field Office are located

Every three years the Utah Division of Air Quality (DAQ) compiles statewide emission inventories to assess the level of pollutants released into the air from various sources (UDAQ 2020). Statewide and County 2017 emissions inventories are provided in the AMR (BLM 2020). In Utah, the largest human sources of criteria air pollutants is area sources for PM₁₀ PM_{2.5} and ammonia (NH₄), on-road sources for CO, point sources for SO₂, and oil & gas sources for VOCs.

Hazardous air pollutants (HAPs) are known or suspected to cause cancer or other serious health effects, or adverse environmental effects, so they are also regulated by the EPA. Examples of listed HAPs emitted by the oil and gas industry include benzene, toluene, ethyl benzene, mixed xylenes, formaldehyde, normal-hexane, acetaldehyde, and methanol. A list of HAP point source emissions by County is published by the Utah Division of Air Quality (UDAQ 2020). The 2017 HAPS emissions are listed for each field office where parcels are located in AMR (BLM 2020).

The parcels in this lease sale are located within Prevention of Significant Deterioration (PSD) Class II areas and are near (within 50 km) Class I National Parks in Utah. The CAA PSD requirements give more stringent air quality and visibility protection to national parks and national wilderness that are designated as Class I areas, but PSD does not prevent emission increases. Federal Land Managers are responsible for defining specific Air Quality Related Values (AQRVs), including visual air quality (haze), and acid (nitrogen and sulfur) deposition, for an area and for establishing the criteria to determine and adverse impact on the AQRVs. AQRVs do not have threshold standards, but Federal land managers have identified levels of concern. Current visibility and deposition information for regional Class I areas is summarized in the AMR (BLM 2020). Over a ten-year period (2009 to 2018), Visibility data in Utah show a statistically significant improving trend for the clearest days at all monitoring sites in Utah except at Capitol Reef National Park (trend not statistically significant). No statistically significant trend (improving or worsening) is observed at any of the IMPROVE sites in Utah for the haziest days. Nitrogen

deposition conditions in Utah are fair to poor with no trend for improving or worsening conditions. Sulfur deposition conditions are good and generally improving.

3.3.1.2 Environmental Consequences

Impacts of the Proposed Action

Any potential effects to air quality from the sale of lease parcels would occur at such time that any issued leases are developed. Please note, this proposed action does not authorize or guarantee the number of wells analyzed herein. If leased, drilling of wells on a lease would not be permitted until the BLM approves an Application for Permit to Drill (APD). Any APDs received would be subject to site specific NEPA review. However, development assumptions have been made in this EA to inform the decision since an issued lease must be developed to keep it from expiring. The near field air quality analysis for the West Fertilizer Project (Kleinfelder 2019) is incorporated by reference as a similar action for the purpose of informing the decision maker on potential impacts to air quality from the development of lease parcels. Parcels outside the Moab Field Office would have similar impacts to those described in the Fishlake National Forest Oil and Gas Leasing Analysis FEIS (USDAFS 2013).

During well development, there could be emissions from earth-moving equipment, vehicle traffic, drilling, and completion activities. NO₂, SO₂, 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 NO₂ and CO emissions, with lesser amounts of SO₂. These temporary emissions would be short-term during the drilling and completion phases.

During well production there could be continuous emissions from separators, condensate storage tanks, and daily tailpipe and fugitive dust emissions from operations traffic. During the operational phase of a well, NO₂, CO, VOC, and HAP emissions would result from the long-term use of storage tanks, pumps, separators, and other equipment. Additionally, road dust (PM₁₀ and PM_{2.5}) would be produced by vehicles servicing the wells.

Annual estimated criteria pollutant emissions from potential future development of a single well was estimated from the Moab MLP FEIS Air Quality Analysis (BLM 2016) emissions inventory, and is summarized in Table 5. Development of individual lease parcels may result in higher or lower emissions for various reasons, including differences with geologic formations, proximity to existing support infrastructure, different development methods and control technology used by a lessee, and other reasons. For total foreseeable emissions, multiply the amounts in the table by the total number of foreseeable wells. However, it is not reasonable to assume that all wells will be drilled in a single year because the lessee has 10 years to establish production on a lease, and historically most leases never have production attempted or established²¹. If production is not attempted within the 10-year timeframe, the lease will be terminated with no development or production emissions occurring.

²¹ See GAO's October 2008 finding that for leases issued from 1987 through 1996, development occurred on 6% of onshore leases and production was achieved on 5%. <https://www.gao.gov/new.items/d0974.pdf>

Table 6. Annual Emissions Estimate for as Single Well (tons/year)

	NO _x	CO	VOC	SO ₂	PM ₁₀	PM _{2.5}	HAPs
Construction	5.25	8.38	2.97	0.09	10.20	1.66	0.11
Operation	0.46	1.07	16.38	0.01	1.48	0.17	1.56
Reclamation	0.02	0.01	<0.01	<0.01	0.01	<0.01	<0.01
Totals	5.73	9.45	19.35	0.10	11.69	1.83	1.68

The primary sources of HAPs would be from oil storage tanks and fugitives, with smaller amounts from other production equipment. A small quantity of HAPs would be 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.

Air quality and AQRV impacts from the development of exploratory wells and production wells were modeled in the Fishlake National Forest Oil and Gas Leasing Analysis FEIS (USDAFS 2013), and are incorporated by reference. The analysis evaluated maximum modeled air pollutant concentrations at various distances and elevations (above and below) from a well site and compared them to Class I and Class II increment thresholds. Generally, results predicted that air quality standards would be met if the at Class I airsheds that are at a distance of 55 kilometers (34 miles) or greater away from a production well or 5 kilometers (3 miles) or greater away from an exploratory well. Further modeling and analysis is recommended if the source is less than 55 or 5 kilometers respectively. Results predicted no potential compliance problems for Class II airsheds. Similar results and recommendations are made about visibility standards.

The results from a nearfield modeling analysis (Kleinfelder 2019) of an oil and gas development in the Moab Field Office showed no potential exceedances of any of the NAAQS in the analysis area, including at Arches and Canyonlands National Parks. Concentrations for the criteria air pollutants ranged from 2% to 94% of the NAAQS. Analysis of secondary air pollutants, such as O₃ and secondary PM_{2.5}, show that concentrations are considerably below impact thresholds. The cancer and non-carcinogenic risks from HAPs emissions are shown to be negligible from individual chemicals or a combination of chemicals. A visibility analysis at both Arches and Canyonlands National Parks shows no exceedance of screening criteria. Predictions of nitrogen and sulfur deposition are considerably lower than the critical load thresholds for Arches and Canyonlands National Parks.

A Visual Impact Screening Model (VISCREEN) analysis was prepared to identify potential visibility impacts to Capitol Reef National Park for parcels that were offered in the December 2019 lease sale (BLM 2019). Evaluation of visibility impacts to from developing those parcels are incorporated by reference as similar to the impacts to Capitol Reef National Park from developing parcels in this lease sale. This analysis showed that visibility impacts would be below screening thresholds for an exploratory well and above for developing a production well. If the parcel is developed additional analysis or mitigation at the APD stage may be necessary to avoid adverse impacts to Capitol Reef National Park.

Parcels 035 and 050 are located within the Uinta Basin ozone nonattainment area and require a general conformity applicability assessment. The applicability assessment is documented in Appendix E – General Conformity Applicability. This assessment demonstrates the indirect emissions associated with this lease sale are not reasonably foreseeable as defined by the Clean Air Act and general conformity is not applicable. Additionally, no emissions are anticipated since the analysis assumptions does not include development of these parcels (Table 4).

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.

Substantial air resource impacts are not anticipated from the development of the lease parcels based on the emissions estimates contained in Table 6, the parcels being in areas compliant with all NAAQS, the air quality analysis for similar oil and gas development in the area, and considering the location of parcels relative to population centers and Class I areas. No further analysis or modeling is warranted for the leasing decision. As identified in notice UT-LN-102 additional analysis or mitigation may be required when parcels are developed to ensure no adverse impacts occur.

Impacts of the No Alternative Action

Under the No Action Alternative, BLM would continue to manage these lands based on the objectives outlined in their class categories. No new attendant infrastructure associated with oil and gas development would be built under the No Action Alternative. No new emissions of pollutants would occur.

3.3.1.3 Required Design Constraints/Mitigation Measures

Application of stipulations and notices listed in Appendix B – Stipulations and Notices would be adequate for the leasing stage to disclose potential future restrictions and to facilitate the reduction of potential impacts.

The BLM does look to mitigate pollutants via lease stipulations and notices and further NEPA actions throughout the lease process. Stipulations and notices would be applied to leases when issued to notify the operator of what would be required (stipulation) and what could potentially be required (notice) at the APD stage. This allows the potential lessee, at the time of bidding on the parcel, to be informed of the range of requirements that could be expect when lease rights are exercised. Additional air quality control measures may be warranted and imposed at the APD stage (such as mitigation measures, best management practices, and an air emissions inventory). The BLM would do this in coordination with the EPA, UDAQ and other agencies that have jurisdiction on air quality. By applying stipulations and notices, leasing would have little impact on air quality. At the APD stage, further conditions of approval (COAs) could be applied based on the environmental analysis for the APD. These control measures are dependent on future regional modeling studies or other analysis or changes in regulatory standards. Application of these notices would be sufficient to notify the lease holder of additional air quality control measures that are necessary to ensure protection and maintenance of the NAAQS. Also, any future development in nonattainment areas would be subject to the conformity process of the Clean Air Act which may require additional mitigation or offsets.

In addition to air quality specific stipulations and notices, NSO requirements have a beneficial effect on air quality. The NSO stipulations create a buffer between the well site and sensitive areas such as Class 1 airsheds. The increased distance between the well site and sensitive areas allows air pollutants more time

to dilute, which reduces atmospheric concentrations at sensitive areas compared to if the parcel did not have an NSO requirement.

Regulatory agencies also require various mitigations measures for oil and gas wells. State permit by rule requirements are identified in Utah Administrative Code R307-504-511. Well development in Indian Country would be subject to permitting requirements in the Federal Implementation Plan for the Indian Country Minor New Source Review Program for the Oil and Natural Gas Industry (80 FR 51991).

3.3.1.4 Cumulative Impacts

The cumulative impact analysis area (CIAA) for air quality is the counties and field offices where lease parcels are located. The CIAA also includes regional Class I areas and other environmentally sensitive areas (e.g., national parks and monuments, wilderness areas, etc.) nearest to the parcels. This EA tiers to the cumulative impacts to air quality and AQRV that were disclosed in the Moab MLP (BLM 2016), Monument Butte FEIS (BLM 2016), and incorporates by reference the BLM's Air Resource Management Strategy (ARMS) Modeling Project (BLM 2014) and the recent UDAQ PM_{2.5} maintenance plan model assessment (UDAQ 2019). These modeling analyses provide a reference for potential cumulative impacts in the region. It is important to note that the ARMS model performance evaluation of ozone indicated a negative model bias (under predicts) during the winter and a positive model bias (over predict) during the summer in the 4 km domain. Overall, the UDAQ PM_{2.5} model performance is good.

Emissions

Past and present actions that have affected and would likely continue to affect air quality in the CIAA include surface disturbance resulting from oil and gas development and associated infrastructure, geophysical exploration, ranching and livestock grazing, range improvements, recreation (including OHV use), authorization of ROWs for utilities and other uses, and road development. Past and present actions in CIAA that have affected and would likely continue to affect air quality are too numerous to list here but would include the development of power plants; the development of energy sources such as oil, gas, and coal; the development of highways and roads; and the development of various industries that emit pollutants. These types of actions and activities can reduce air quality through emissions of criteria pollutants (including fugitive dust), VOCs, and HAPs, as well as contribute to deposition impacts and to a reduction in visibility.

Emissions in the oil and gas sector roughly parallel oil and gas production. The oil and gas production growth estimates for the Rocky Mountain region are used from the EIA 2020 Annual Energy Outlook (EIA 2020) to provide an estimate of the change in emissions from oil and gas sources in Utah. In the reference scenario projected oil and gas production growth remains relatively flat. Oil production is anticipated to decrease by an annual average of approximately 0.3% and gas production increase annually by approximately 0.1%. Similarly, oil and gas related emissions from existing and foreseeable wells, plus development of lease parcels, are anticipated to remain relatively the flat compared to those reported in the 2017 National Emissions Inventory (UDAQ 2020).

Modeled Impacts

The Moab MLP analysis included far-field modeling to evaluate impacts on NAAQS and AQRVs from multiple sources over the entire MLP area (portions of Moab and Monticello Field Offices. Technical details for this modeling are incorporated from Appendix F of the MLP FEIS. The modeling analysis evaluated three scenarios based on the range of alternatives in the MLP FEIS. The High scenario assumed

9 wells would be drilled per year with 100% of the wells producing, the Medium scenario assumed 9 wells would be drilled per year with 60% of the wells producing, and the Low scenario assumed four wells would be drilled per year with 60% of the wells producing. Modeling results show no exceedances of the NAAQS for any pollutant for any of the modeled scenarios (BLM 2016). From 2015 through 2019 an average of less than 2 wells have been drilled per year in the Moab Field Office, which includes most of the Moab MLP planning area. Development of lease parcels is not anticipated to increase the development rate in the area and as a result impacts to air quality and AQRVs are likely to be less than analyzed in the Moab MLP FEIS Low emissions scenario.

The BLM incorporates by reference the ARMS modeling results that were evaluated in the Monument Butte FEIS (BLM 2016). The ARMS model determined that in the 2021 future year, all assessment areas are within the applicable PSD increments for annual NO₂, 3-hour SO₂, annual SO₂, and annual PM₁₀, while most assessment areas exceed the 24-hour PM_{2.5} and PM₁₀ PSD increment (BLM 2014). Figure 1 shows that the ARMS predicted ozone design values for the CIAA exceed the NAAQS, in the Uinta Basin and along the Wasatch Front metropolitan area. Other areas of the state have concentrations below the NAAQS, generally between 0.055 to 0.065 ppm. However, a few hot spots approach the NAAQS, with concentration between 0.065 and 0.070 ppm. In Class I and Class II areas outside the Uinta Basin ARMS study area, O₃ concentrations are highest during the summer period (BLM 2014). For areas outside the Uinta basin, including the CIAA, the modeling results are likely conservative due to the over prediction of summertime O₃ in the ARMS model. If background O₃ levels rise additional analysis may be needed when plans of development are submitted for the lease parcels. Predicted PM_{2.5} design values are shown in Figure 2, with annual concentrations in the CIAA generally below 5 µg/m³.

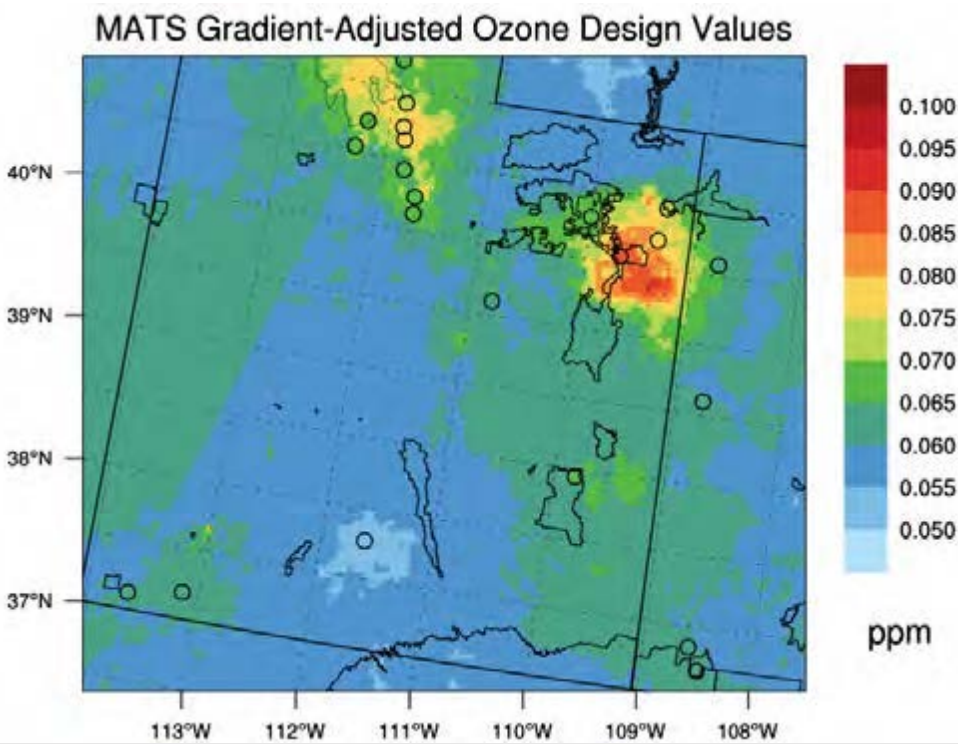


Figure 1. ARMS predicted ozone design values with on the books controls for oil and gas emissions in the year 2021.

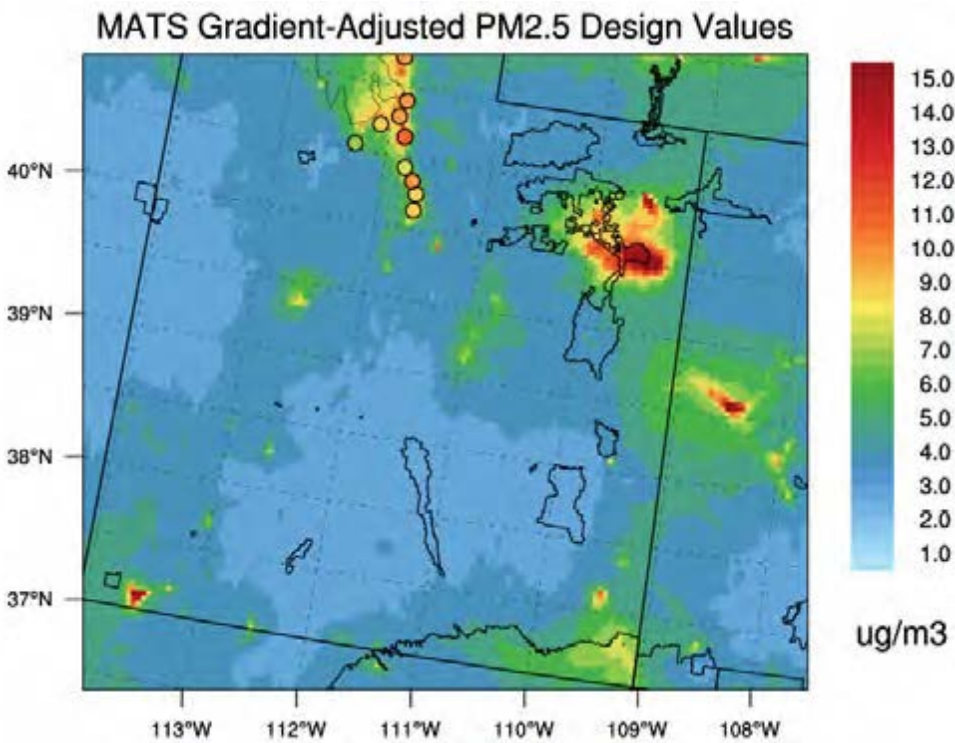


Figure 2. ARMS predicted PM2.5 design values with on the books controls for oil and gas emissions in the year 2021.

The UDAQ performed air quality modeling to predict future design values for the Daily PM_{2.5} maintenance plan. PM_{2.5} is primarily a wintertime air pollution problem due to strong inversions and valleys surrounded by tall mountains limiting the dilution of PM_{2.5} forming pollutants. As a result, the UDAQ modeled three wintertime PM_{2.5} episodes where meteorological conditions produced the best model performance. Model results show attainment of the standard at all locations in future years 2026 and 2035 (UDAQ 2019), see Figure 3 .

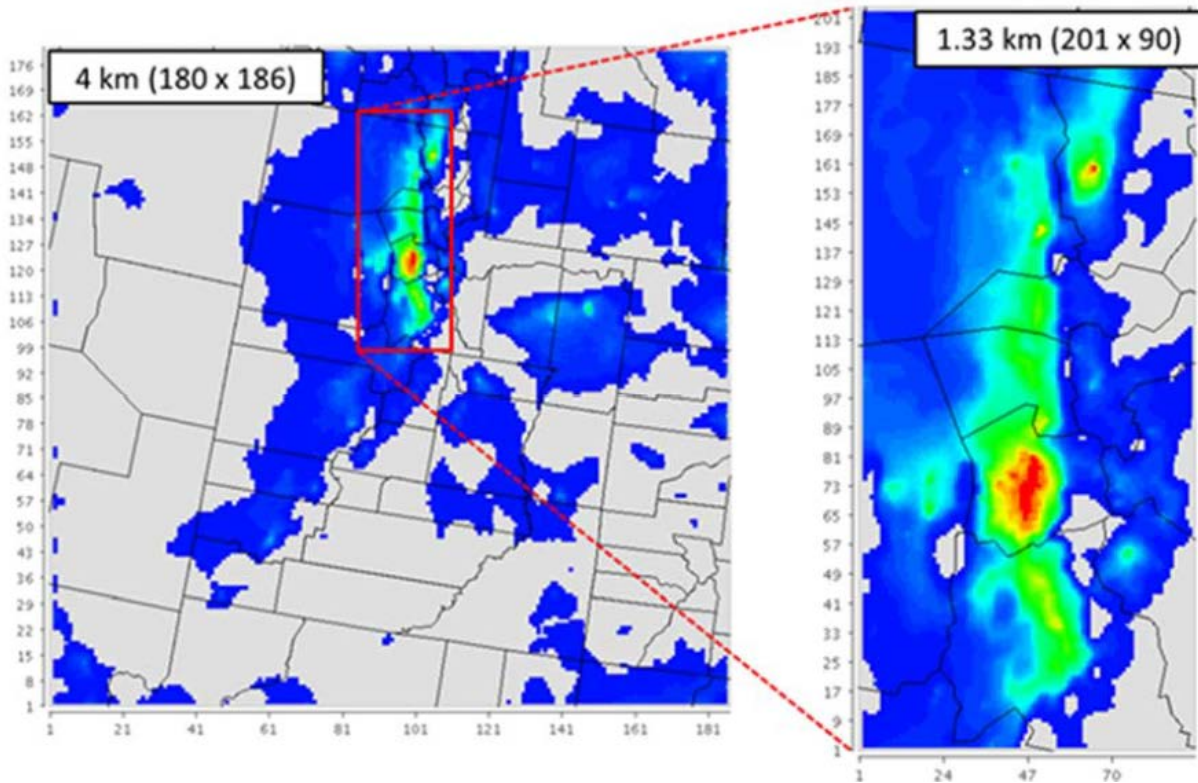


Figure 3. UDAQ CAMx photochemical modeling domains and predicted PM_{2.5} concentrations from the January 7, 2011 episode (red represents higher concentrations ~35 µg/m³, blue and gray are lower concentrations).

Other emission contributors to ozone and PM_{2.5} concentrations would continue at present rates such as construction, urban development, and personal vehicle use. Development of the lease parcels with existing and foreseeable emissions sources are unlikely to cause exceedances of the NAAQS in the CIAA.

Air Quality Related Values

AQRVs were also analyzed in the ARMS and Moab MLP modeling studies. The MLP analyzed changes to visibility conditions by modeling the number of days there was a change in deciviews, which is a unit of measurement to quantify human perception of visibility. It is derived from the natural logarithm of atmospheric light extinction coefficient. One (1) deciview is roughly the smallest change in visibility (haze) that is barely perceptible. Modeled visibility impacts ranged from 159 days with more a than 0.5 dv change and 86 days with more than a 1.0 dv change at Canyonlands National Park for the high emissions scenario, to zero days with a 0.5 dv and 1.0 dv change at any local Class I area under the low emissions scenario. Coarse particulate (PM₁₀), primarily road dust from truck traffic on unpaved roads, was the dominate pollutant of concern under both high and medium emissions scenarios. Under the low emissions scenarios', nitrogen oxides play a greater role in visibility impacts. The specific meteorological year used in the analysis also had an influence on modeled impacts. Meteorology in 2008 had substantially greater levels of impacts across the board compared to the previous two years of meteorological data. This indicates sensitivity to meteorological variability, and given the large role

particulates play, adverse visibility impacts can most likely be tied to drier, hotter, and/or windier conditions (BLM 2016). Additionally the AMR (BLM 2019) shows that visibility has been improving at the Class I areas in Utah. Development of lease sale parcels would not result in any new visibility impacts beyond what has been disclosed in the Moab MLP FEIS. AQRVs were also analyzed in the ARMS modeling study. Visibility conditions in Class I areas generally show improvement in the 2021 future year scenarios relative to the 2010 Base Year and 2010 Typical Year.

All MLP modeled values of sulfur and nitrogen deposition were near or below the Deposition Analysis Thresholds of 0.005 kg/ha/yr for total nitrogen and total sulfur for all the modeled alternatives, with the exception of the high and medium emissions scenarios for nitrogen deposition in Arches and the high, medium, and low scenarios in Canyonlands National Park for the 2008 meteorological year (BLM 2016). Development of lease parcels would not result in any new deposition impacts beyond what has been disclosed in the Moab MLP FEIS.

The ARMS model results generally show a decrease in deposition values for the 2021 future year scenarios relative to the 2010 Typical Year. However, the differences in estimated deposition values between all four future year scenarios are generally very small. Acid neutralizing capacity change at all seven sensitive lakes exceeds the 10 percent limit of acceptable change for all model scenarios.

The proposed action, in concert with other past, present, and reasonably foreseeable actions may contribute to an increase of emissions through direct and indirect impacts, but it would not be expected to increase cumulative effects to levels that would compromise the viability of air quality within or near the CIAA. Visibility and deposition conditions in Class I and Class II areas would likely follow current improving trends as described in the AMR (BLM 2019).

Hazardous Air Pollutants

The EPA National Toxics Assessment tool is used to evaluate impacts from existing HAPs emissions in Utah. The EPA has determined that, for Utah counties with BLM managed lands, the total cancer risk is 12.1 to 26.7 in 1 million (EPA 2019), see AMR (BLM 2020). This cancer risk is within the acceptable range of risk published by the EPA of 100 in 1 million as discussed in the National Contingency Plan, 40 CFR 300.430. The highest cancer risks in Utah are found in counties along the Wasatch Front and in Washington County. The noncancer respiratory hazard index for Utah counties with BLM managed lands is between 0.14 and 0.54. Hazard index values less than one mean it is unlikely that air toxics will cause adverse noncancer health effects over a lifetime of exposure. Potential development of the leases and other foreseeable emissions sources would contribute to HAPs emissions and associated carcinogenic and noncancer risks.

The proposed action of leasing would not directly contribute to cumulative criteria pollutant emissions or visibility, acid deposition, and HAPs impacts. Future potential development of the leases would contribute to criteria pollutant emissions and air quality related value changes as previously disclosed. However, that contribution is contained within and would be indistinguishable from and dwarfed by the model and emission inventory scope and margin of error that are used to assess those impacts due to the small size of the foreseeable development in relation to the modeled foreseeable development.

The No Action alternative would not contribute to criteria pollutant emissions, HAP emissions, or AQRV impacts because the leases would not be issued, and no development could occur.

3.3.2 Issue 2: What quantity of greenhouse gas emissions (GHG) would be generated from subsequent oil and gas development of leased parcels based upon assumptions for analysis? How do these amounts compare to other sources of GHGs?

3.3.2.1 Affected Environment

Climate is the composite of generally prevailing weather conditions, such as temperature and precipitation, of a particular region throughout the year, averaged over a series of years. Climate change is the long-term (several decades or longer) alteration of atmospheric weather patterns (temperature, precipitation, winds, etc.), but changes could also occur in other parts of the climate system such as the hydrosphere (water), cryosphere (ice), biosphere (living organisms, ecosystems), or lithosphere. While climate is always changing much of the recent observed changes are linked to rising levels of GHGs in the atmosphere (EPA 2016) due to human activities. The BLM Utah 2020 Air Resource Management Strategy Monitoring Report (AMR) (BLM 2020) discusses past, present, and foreseeable climate conditions and GHG emissions, and is incorporated by reference.

Each GHG has a global warming potential (GWP) that accounts for the intensity of each GHG’s heat trapping effect and its longevity in the atmosphere. GWP values allow for a comparison of the impacts of emissions and reductions of different gases. Specifically, it is a measure of how much energy the emissions of 1 ton of a gas will absorb over a given period of time, relative to the emissions of 1 ton of CO₂. The GHGs are presented using the unit of Metric Tons of CO₂ equivalent (MT CO₂e), a metric to express the impact of each different GHG in terms of the amount of CO₂ making it possible to express GHGs as a single number. According to the Intergovernmental Panel on Climate Change (IPCC), GWPs typically have an uncertainty of ±35 percent (IPCC 2014). GWPs have been developed for several GHGs over different time horizons including 20-year, 100 year, and 500 year. The choice of emission metric and time horizon depends on type of application and policy context; hence, no single metric is optimal for all policy goals. The 100-year GWP (GWP100) was adopted by the United Nations Framework Convention on Climate Change (UNFCCC) and its Kyoto Protocol and is now used widely as the default metric. In addition, the EPA uses the 100 year time horizon in its *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2018* (EPA 2020) and GHG Reporting Rule requirements under 40 CFR Part 98 Subpart A, and uses the GWPs and time horizon consistent with the IPCC Fifth Assessment Report (IPCC 2014), Climate Change Synthesis Report (2014) in its science communications. The BLM Utah uses 100-year GWPs from the IPCC AR5 that reflect the current state of science, except where stated otherwise. Table 7 lists the GWP values from the IPCC AR5. Using the 100-year GWP values allows emissions estimates to be directly compared with state, national, and global emissions.

Table 7 Greenhouse Gases and Their Global Warming Potentials

Time Horizon	Carbon Dioxide (CO ₂)	Methane (CH ₄)	Nitrous Oxide (N ₂ O)	Hydrofluorocarbons (HFCs)	Perfluorocarbons (PFCs)	Sulfur hexafluoride (SF ₆)
100-year	1	28	265	Up to 12,400	6,630-11,100	23,500
20-year	1	84	264	Up to 10,800	4,880-8,210	17,500

Source: IPCC AR5 (IPCC 2013)

State, national, and global annual GHG emissions are presented in Table 8. Global emissions were obtained from the World Resources Institute Climate Data Explorer (World Resource Institue 2019) and are reported up to the year 2016. National emissions for the 2018 reporting year come from the EPA

Inventory of US Greenhouse Gases Emission and Sinks 1990-2018 (EPA 2020). Emissions for the state of Utah were obtained from the U.S. Energy Information Administration (EIA 2020) and supplemented by data from the World Resource Institute (agriculture, industrial sources, waste management, and fugitive emissions) and EPA (major industrial sources).

Table 8. Annual State, National, and Global GHG Emissions (CO₂e) in Million Metric Tons (MMT) per Year

Utah	US Energy Sector	United States	Global
71.8	5,547.2	6,676.6	46,140.95

Sources: Global - World Resource Institute, CAIT Climate Data Explorer (World Resource Institute 2019)
 United States - EPA Inventory of US Greenhouse Gases Emission and Sinks 1990-2017 (EPA 2020)
 Utah – U.S. Energy Information Administration, EPA FLIGHT (EPA 2018)and World Resource Institute (World Resource Institute 2019)

The U.S. Geological Survey (USGS) has produced estimates of the GHG resulting from the extraction and end-use combustion of fossil fuels produced on Federal lands in the United States, as well as estimates of ecosystem carbon emissions and sequestration on those lands (USGS 2018). The study reports GHG emissions from extraction, transport, fugitives, and combustion of fossil fuels over a ten-year period (2005-2014). In 2014, nationwide gross GHG emissions from fossil fuels extracted from Federal lands was 1,332.1 MMT CO₂e. The USG report also identifies that in 2014 Federal lands sequestered 475 MMT CO₂e, which is over 60% of the 773.5 MMT CO₂e sequestered 2018 for the entire United States (EPA 2020). Emissions from fossil fuels produced on Federal lands represent, on average, 23.7 percent of national emissions for CO₂, 7.3 percent for CH₄, and 1.5 percent for N₂O over the 10 year evaluation period (USGS 2018). Uncertainty associated with emissions estimates is 2-5% for combustion, 25-42% for fugitives, and 12-15% for degassed CH₄ emissions from coal mines. Trends and relative magnitude of emissions are roughly parallel to production volumes. Utah Federal fossil-fuel-related gross emissions in 2014 were 46.75 MMT CO₂e, approximately 3.5% of the estimate of national emissions from Federal fossil fuels (USGS 2018). Emissions from the adjacent fossil fuel producing states of Colorado, New Mexico, and Wyoming were 55.78, 91.63, and 744.2 MMT CO₂e, respectively, in 2014. For comparison, Utah Federal emissions were 83.8% of Colorado’s, 51.0% of New Mexico’s, and 6.3% of Wyoming’s.

Estimated annual GHG emissions from existing oil and gas wells are presented in Table 9. Single well emissions estimates are used from relevant oil and gas projects occurring in Utah to estimate the operation emissions from existing wells and construction emissions for new wells. See the AMR (BLM 2020) for details on single well emissions estimates. Construction emissions are based on the number of new wells drilled in 2019. New well operation emissions are not included since they are approximately offset by the decrease in emissions from wells that were plugged and abandoned in 2019. In 2019, there were 126 new wells drilled and 195 wells plugged. Existing oil and gas sources include active producing wells and shut-in wells that are capable of producing, as reported by the Utah Division of Oil Gas and Mining (UDOGM) at the end of 2019. Estimates of GHG emissions from combustion can be made by multiplying the produced number of barrels (bbl.) of oil and thousand cubic feet (mcf) of gas with GHG emission factors from the EPA Greenhouse Gases Equivalencies Calculator – Calculations and References website (EPA, 2019). These emission factors provide an estimate of the equivalent amount of CO₂ produced from a bbl. of oil or mcf of gas. The emission factors follow IPCC guidance by accounting for 100% oxidation

of carbon in the fossil fuel to CO₂, regardless of whether the carbon atom is part of a CO₂, CH₄, or another carbon-based molecule. Both Federal and non-federal wells are included in the emissions estimates. For context, Federal wells account for approximately 55% of all producing wells in Utah and Federal emissions likely account for a similar percentage of all oil and gas well emissions in the state.

Table 9. 2019 Baseline Annual GHG Emissions (MT CO₂e/yr.) from Existing Oil and Gas Wells.

Field Office	Number of Producing Wells	Operation Emissions	Combustion Emissions	New Well Construction Emissions	Annual O&G Emissions
Cedar City	0	0	0	0	0
Fillmore	1	2,025	0	0	2,025
Kanab	22	44,542	54,626	0	99,168
Moab	438	783,382	248,896	0	1,032,224
Monticello	719	1,285,874	2,180,178	8,1899	3,474,251
Price	1,340	573,977	2,492,670	0	3,066,647
Richfield	36	72,886	639,786	5,657	718,329
Salt Lake	50	101,231	172,567	0	273,798
St George	0	0	0	0	0
Vernal	11,229	4,809,838	24,891,442	79,404	29,780,684
Statewide Total	13,835	7,673,701	30,680,164	93,261	38,447,125

EPA Emission factors: 0.43 metric tons CO₂e/bbl., and 0.0551 metric tons CO₂e/mcf. (EPA 2019)
Production and well data obtained from the Utah Division of Oil Gas and Mining (UDOGM 2018).

Climate change is linked to the rising levels of GHG's in the atmosphere. Earth's atmosphere has a natural greenhouse effect wherein naturally occurring gases such as water vapor, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O) and fluorinated gases absorb and retain heat (EPA 2018). Several activities contribute to the phenomenon of climate change, including emissions of GHGs (especially CO₂ and methane) from fossil fuel development, large wildfires, activities using combustion engines, changes to the natural carbon cycle, and changes to radiative forces and reflectivity (albedo). The National Oceanic and Atmospheric Administration's Earth Systems Research Laboratory tracks atmospheric concentrations of GHG, and data from the annual mean concentration and rate of change for CO₂, CH₄, and N₂O, see Table 10.

Table 10. Global Atmospheric Concentration and Rate of Change of Greenhouse Gases

	CO ₂	CH ₄	N ₂ O
Pre-Industrial Concentration	280 ppm	0.700 ppm	0.270 ppm
2018 Atmospheric Concentration	407.38 ppm	1.857 ppm	0.331 ppm
2009-2018 Rate of Change	2.29 ppm/yr	0.007 ppm/yr	0.010 ppm/yr

Source: National Oceanic and Atmospheric Administration, Earth System Research Laboratory (NOAA/ESRL 2020), and EPA Inventory of US Greenhouse Gases Emission and Sinks 1990-2017 (EPA 2020)

The Annual Greenhouse Gas Index (AGGI) was developed to provide an easily understood standard for expressing the climate-warming influence of long-lived GHG's. Specifically, the AGGI is the ratio of the total direct climate forcing from measured GHG concentrations compared to the 1990 baseline year. Climate forcing, sometimes called radiative forcing, is the difference between the amount of solar energy absorbed by the earth and the amount of energy that is radiated back to space. The 1990 year is given an

AGGI value of 1.0 and the pre-industrial era is given a value of 0.0 (NOAA/ESRL 2019). The AGGI for 2018 was 1.43, which represents a 43% increase to climate forcing since 1990. While the AGGI does not predict the amount the Earth’s climate has warmed, it does provide a measure of the effect that GHG emissions have on the climate system.

The level of climate forcing can be assessed by evaluating historical climate conditions such as temperature and precipitation. In the United States, climate data is reported by geographic regions called “climate divisions”. The seven climate divisions in Utah are organized based on areas with similar terrain and weather stations observing the same general climate conditions. All climate divisions in Utah have some general similarities such as winter having the highest amount of monthly precipitation. Average temperature and precipitation and trend information for each Utah climate division is compiled from the NCEI Climate at a Glance Website (NOAA/NCEI 2020) and is presented in Table 11. The averages for the most recent climate normal period (three-decade timeframe, 1981 to 2010) are also presented for comparison to the average of all data from 1895 to 2019. Temperatures have been increasing 0.2 to 0.3 °F per decade. The North Central and Western Utah climate divisions have shown an increase in annual precipitation, while the other Utah climate divisions show little to no substantial change to annual precipitation. Additional details on climate in Utah is available in the AMR (BLM 2020).

Table 11. Current Climate Conditions and Trends in Utah

Climate Division	1895-2019 Mean		1895-2019 Trend (change/decade)		1981-2010 Mean	
	Temp (°F)	Precip (in.)	Temp (°F)	Precip (in.)	Temp (°F)	Precip (in.)
1, Western	49.6	9.83	+ 0.2	+0.06	50.2	10.45
2, Dixie	58.6	13.01	+ 0.2	-0.01	59.4	13.28
3, North Central	47.9	16.71	+ 0.2	+0.13	48.5	18.14
4, South Central	46.0	15.74	+ 0.2	+0.03	46.8	16.28
5, Northern Mountains	40.2	23.46	+ 0.2	+0.01	41.0	24.35
6, Uinta Basin	45.2	10.76	+ 0.3	+0.01	46.4	11.23
7, Southeast	51.6	9.80	+ 0.3	-0.01	52.7	10.10
State of Utah	47.8	13.46	+ 0.2	+0.03	48.7	14.05

November 2018, the Fourth National Climate Assessment (NCA4) Volume II was published. Compared to previous reports, NCA4 provides greater detail on regional scales as impacts and adaptation tend to be realized at a more local level. The Southwest region (Arizona, California, Colorado, New Mexico, Nevada, and Utah) encompasses diverse ecosystems, cultures, and economies, reflecting a broad range of climate conditions, including the hottest and driest climate in the United States. The average annual temperature of the Southwest increased 1.6°F (0.9°C) between 1901 and 2016. Moreover, the region recorded more warm nights and fewer cold nights between 1990 and 2016, including an increase of 4.1°F (2.3°C) for the coldest day of the year. Each NCA has consistently identified drought, water shortages, and loss of ecosystem integrity as major challenges that the Southwest confronts under climate change. Since the last assessment, published field research has provided even stronger detection of hydrological drought, tree death, wildfire increases, sea level rise and warming, oxygen loss, and acidification of the

ocean that have been statistically different from natural variation, with much of the attribution pointing to human-caused climate change (USGCRP 2018).

3.3.2.2 Environmental Consequences

Impacts of the Proposed Action

The BLM recognizes that the reasonably foreseeable consequence of leasing may lead to oil and gas development, and that such development could result in an increase in GHG emissions due to well development and operations, and from downstream uses of the petroleum products produced from these parcels.

Emissions from Lease Parcel Development

At the leasing stage, BLM cannot develop a precise emissions inventory, as many factors, including the duration of possible development, and the types of related equipment (rig engine tier, horse power, etc.) that may be utilized by a lessee in the future, are unknown. Emissions inventories developed for recent projects in each BLM Utah district are used as estimates for this EA. Emissions estimates for a single well are provided in the AMR (BLM 2020). These estimates are conservative since many wells are developed on multi-well pads. Single wells emissions are reduced when developed on multi-well pads due to shared operational equipment and construction of a single pad, access road, and pipeline. Since there are no active producing fields in the Cedar City, Fillmore, and St. George field offices wells drilled in these areas are assumed to be exploratory and no operational or combustion emissions would occur.

Emissions of GHGs can occur during both the construction and operation phase of a well. Construction emissions occur from heavy equipment and vehicle exhaust, drill rigs, completion equipment including fracturing engines, and venting. Operation emissions may occur from storage tank breathing and flashing, truck loading, pump engines, heaters and dehydrators, pneumatics, flaring, fugitives, and vehicle exhaust. Estimates of GHG emissions from the potential development of lease parcels are listed in Table 12.

Table 12. Estimated Emissions from Construction and Operating Potential Future Wells

Field Office	Development Assumption (wells)	Single Well Emissions (MT CO ₂ e)		Total Emissions (MT CO ₂ e)	
		Construction	Operation/yr	Construction	Operation/yr
Fillmore	1	943	0	943	0
Moab	24	2,733	1,788	65,592	42,922
Price	2	679	428	1,357	857
Richfield	14	943	2,025	13,201	28,345
Salt Lake	1	943	2,025	943	2,025
Vernal	0	679	428	0	0
Total	42	-	-	82,035	74,148

Using the 20-year GWP time horizon, emissions estimates for well construction and operation are 96,614 MT CO₂e and 149,943 MT CO₂e/yr. The 20-year GWP overestimates emissions since the single well emissions inventories used in this analysis were developed before implementation of Utah Administrative Code R307-511: Associated Gas Flaring Requirements. This rule requires that associated gas either be

routed to a sales pipeline, combustor unit, or other VOC control device which results in a reduction of methane emissions and the 20-year GWP.

Emissions from Combustion of Produced Oil or Gas

If lease parcels are developed and if the resulting wells produce oil or gas, GHG emissions are expected to result from the downstream end-use of the fossil fuel. To calculate estimates of downstream emissions for this EA, the BLM assumed that all produced oil or gas will be combusted (such as for domestic heating or energy production). However, the BLM has no authority to direct or regulate the end-use of the produced products and an actual end-use may differ from the assumption used for calculating downstream GHG emissions.

As BLM does not know how much oil or gas will be produced from the parcels that would be affected by the proposed action, the BLM has assumed future wells will produce oil and gas in similar amounts as existing nearby wells. Annual production for a single well is estimated by taking ten years (2010 to 2019) of production data and dividing it by the number of producing wells during the same period. Single well annual production is multiplied by the number of wells assumed to be developed from this lease sale and emissions factors to provide an estimate of downstream combustion emissions. Since this approach uses production data from both new and old wells the emissions estimates are representative of average annual emissions over the entire life of a well. Emissions may differ for individual years, with new wells likely having higher GHG combustion emissions and older wells having lower emissions due to production decline as wells age.

Estimates of GHG emissions from combustion are made by multiplying the produced number of barrels (bbl.) of oil and thousand cubic feet (mcf) of gas with GHG emission factors from the EPA Greenhouse Gases Equivalencies Calculator – Calculations and References website (EPA, 2019). These emission factors provide an estimate of the equivalent amount of CO₂ produced from a bbl. of oil or mcf of gas. The emission factors follow IPCC guidance by accounting for 100% oxidation of carbon in the fossil fuel to CO₂, regardless if the carbon atom is part of a CO₂, CH₄, or other hydrocarbon molecule. Estimates of downstream GHG combustion emissions are provided in Table 13.

Table 13. Annual Estimated Emissions from Combustion of Produced Oil and Gas from the Proposed Action

Field Office	Development Assumption (wells)	Estimate Produced Oil (bbl.)	Estimated Produced Gas (mcf)	Estimated Combustion (MT CO₂e/yr)
Fillmore	1	0	0	0
Moab	24	26,171	190,427	21,746
Price	2	92	108,687	6,028
Richfield	14	878,605	215,533	389,676
Salt Lake	1	3,482	67,333	5,207
Vernal	0	0	0	0
Total	42	908,349	581,981	422,657

The estimated production-based combustion emissions are likely high for the Richfield Field Office and total shown in Table 13. Production estimates are skewed high due to the low number of producing wells in the Richfield Field office and the inclusion of the highest producing well in the state, which elevates total and single well average production. To provide context for the high emissions estimates for the Richfield Field Office, the estimated combustion emissions in the Richfield Field Office are approximately 92% of the lease sales total in Table 13, while the estimated number of wells is 33% of the total (14 vs. 42) and estimated operation emissions is 38% of the total in Table 12.

The total estimated GHG annual emissions from well operations (Table 12) and fossil fuel combustion (Table 13), from development on the parcels considered is 496,805 MT CO₂e. This is 0.69% of Utah emissions (Table 8) and 1.3% of existing oil and gas wells (Table 9) in the state. To express GHG emissions on a scale relatable to everyday life the EPA GHG equivalency calculator can be used (<https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>). The projected emissions annual emissions are equivalent to 107,332 passenger vehicles driven for one year and would require approximately 648,804 acres of U.S. forests to sequester. Lifetime GHG emissions from the parcels considered can be estimated by multiplying well production life with the operation and combustion emissions and adding the one-time construction emissions. Assuming an average well life of 30 years, the total gross emissions from the parcels analyzed would be 14.99 MMT CO₂e.

Since climate impacts are a result of global aggregate GHG emissions, climate change impacts are discussed in the cumulative impacts section of this document.

Social Cost of Carbon and Carbon Budgeting

The BLM has considered whether a “social cost of carbon” estimate would contribute to informed decision making regarding the climate consequences of the greenhouse gas emissions considered here. This EA provides no quantitative monetary estimates of any benefits or costs. NEPA does not require an economic cost-benefit analysis (40 C.F.R. § 1502.23), although NEPA does require consideration of “effects” that include “economic” and “social” effects (40 C.F.R. 1508.8(b)). Quantifying only the costs of oil and gas development, by using the social cost of carbon metrics, but not the benefits (as measured by the economic value of the proposed oil and gas development and production generally equaling the price of oil and gas minus the cost of producing, processing, and transporting the minerals), would yield information that is inaccurate and not useful for the decision-maker.

The social cost of carbon tool was developed for the express purpose of “allow[ing] agencies to incorporate the social benefits of reducing carbon dioxide (CO₂) emissions into cost-benefit analyses of regulatory actions that impact cumulative global emissions” and to assist agencies in complying with Executive Order 12866. Executive Order 12866 required federal agencies to assess the cost and benefits of rulemakings as part of their regulatory impact analyses. 58 Fed. Reg. 51,735 (October 4, 1993), supplemented by Exec. Order No. 13,563, 76 Fed. Reg. 3821 (Jan. 18, 2011). This requirement was subsequently withdrawn by Executive Order No. 13783, 82 FR 16093 (Mar 28, 2017). The action considered here is not a rulemaking and does not require a regulatory-impact analysis.

Carbon budgeting is an approach for identifying how much additional CO₂ emissions the atmosphere can accept in order to limit global warming to a certain temperature above pre-industrial levels (2.0C for Paris Agreement, 1.5C for IPCC 2018 Special Report (IPCC 2018)). The carbon budget was developed as a tool to assist policy makers in reducing GHG emissions on national and global scales. There is no

requirement or mechanism to apply a worldwide carbon budget to a site-specific project such as the proposed action. Carbon budgets do not currently exist at the national or state level, and creating such a budget is beyond the scope of this EA. While a carbon budget sounds like a simple tool there is a lot of complexity and uncertainty to it that could make it confusing to the decision maker and public. There are multiple carbon budgets to choose from, each representing a different amount of global warming. Even for a carbon budget that limits warming to 1.5C, scientists have struggled to agree on the size of the budget. According to the IPCC 2018 Special Report, “uncertainties in the size of these estimated remaining carbon budgets are substantial.” The IPCC estimates the budget for a 50/50 chance of exceeding 1.5C at 580 gigatonnes of CO₂ (GtCO₂), with an uncertainty of ±400GtCO₂. This uncertainty is nearly 70% of the budget. The uncertainty results from what the precise meaning of the 1.5C target is, definition of what "surface temperature" means, definition of the "pre-industrial" period, what observational temperature dataset to use, uncertainty in non-CO₂ factors that influence warming, and if earth-system feedbacks should be taken into account. With the large uncertainty in the remaining carbon budgets, it is not a useful tool for evaluating a GHG emissions significance level at this time. Additionally, carbon budgets are inherently reduced with any GHG emissions. Based on the disclosed GHG emissions in the EA and the substantial uncertainties in the size of carbon budgets, inclusion of carbon budgets would not provide additional useful information to the decision maker or public. The IPCC further states that policy actions across sectors and spatial scales are needed to reduce emissions and limit warming. Evaluations of such policy actions are beyond the scope of this EA.

Instead of relying on a cost-benefit analysis or carbon budgets, the BLM’s approach to estimating GHG emissions and potential effects on climate change in this EA is to include calculations to show estimated construction, operation, combustion, and cumulative GHG emissions from potential future development. The BLM also includes a discussion of potential climate change impacts at global and regional scales. BLM’s approach recognizes that there are adverse environmental impacts related to climate change associated with the development and use of fossil fuels, provides potential GHG emissions estimates, and discusses potential climate change impacts qualitatively. This effectively informs the decision-maker and the public of the potential for GHG emissions and the potential implications of climate change. This approach presents the data and information in a manner that follows many of the guidelines for effective climate change communication developed by the National Academy of Sciences (Council 2010) by making the information more readily understood and relatable to the decision-maker and the general public.

Impacts of the No Alternative Action

Under the No Action Alternative, the parcels would not be leased so no foreseeable development could occur. As a result, no GHG emissions from the development of these lease parcels would occur and there would be no addition to the existing national and global emissions that influence climate change.

3.3.2.3 Mitigation of Impacts from GHG Emissions and Climate Change

The IPCC prepared a special report in 2018 (IPCC 2018) on the impacts of global warming of 1.5 °C above pre-industrial levels, and related global greenhouse gas emission pathways. At the end of 2017 human activities are estimated to have caused 1.0 °C warming since pre-industrial times, with 1.5 °C warming expected to occur sometime between 2030 and 2052. The report states that limiting global warming to 1.5 °C compared to 2.0 °C or more would lower the projected climate change impacts and adaptation needs. However, the IPCC special report also states that stringent and integrated policies

across sectors and scales are needed to mitigate emissions to limit warming to 1.5 °C. Such policy actions are beyond the scope of the Proposed Action being considered by the BLM.

The BLM regulates portions of natural gas and petroleum systems identified in the EPA Inventory of U.S. Greenhouse Gas Emissions and Sinks report (EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2017 2019). In carrying out its responsibilities, BLM has developed a list of best management practices (BMPs) designed to reduce emissions from field production and operations. Analysis and approval of future development on the lease parcels may include application of BMPs within BLM's authority, as Conditions of Approval, to reduce or mitigate GHG emissions. Additional measures developed at the project development stage also may be incorporated as applicant-committed measures by the project proponent or added to necessary air quality permits.

BMPs to reduce the impacts of climate change and GHG emissions may include, but are not limited to:

- Flare hydrocarbon and gases at high temperatures in order to reduce emissions of incomplete combustion through the use of multi-chamber combustors;
- Require that vapor recovery systems be maintained and functional in areas where petroleum liquids are stored;
- Installation of liquids gathering facilities or central production facilities to reduce the total number of sources and minimize truck traffic;
- Use of natural gas fired or electric drill rig engines;
- The use of selective catalytic reducers and low-sulfur fuel for diesel-fired drill rig engines; and,
- Implementation of directional and horizontal drilling technologies whereby one well provides access to petroleum resources that would normally require the drilling of several vertical wellbores;

Additionally, the BLM encourages natural gas companies to adopt proven cost-effective technologies and practices that improve operation efficiency and reduce natural gas emissions, to reduce the ultimate impact from the emissions.

In October 2012, the EPA promulgated air quality regulations for completion of hydraulically fractured gas wells. These rules require air pollution mitigation measures that reduce the emissions of VOCs during gas well completions. Mitigation includes a process known as "green completion" in which the recovered products are sent through a series of aboveground, closed, separators which negates the need for flowing back into surface pits as the product is immediately sent to gas lines and the fluids are transferred to onsite tanks.

3.3.2.4 Cumulative Impacts

The CIAA for GHG emissions and climate change occurs on various scales (local, state, national, and global). Emissions from past and present actions on various scales are presented in Section 3.3.2.1 (see Table 8, Table 9, and Table 10) and foreseeable emissions are discussed in this section of the EA. Climate impacts occur throughout the globe and may include increases in atmospheric and ocean temperatures, sea level rise, impacts to ecosystem biodiversity, an increase in frequency, intensity, and duration of weather phenomena, and other impacts that are too numerous to list. While emissions and climate change occur on multiple scales, this EA focuses on state and regional impacts since the public tends to experience the impacts and adaptation at a local level (USGCRP 2018) and this will provide the most meaningful information for the decision maker and the public living near lease parcels.

GHG emissions from past and present oil and gas development and from other sectors is provided in Section 3.3.2. The affected environment section also discusses the existing conditions and trends for atmospheric GHG concentrations and climate resulting from emissions of past and present actions. Estimates of foreseeable emissions and resulting climate conditions is presented in this section.

Short-term foreseeable GHG emissions from oil and gas wells in Utah are estimated from approved applications for permit to drill (APD) that have not been drilled to completion. However, not all APDs are drilled, and not all wells that are drilled go into production. Over a 5-year period (2015-2019), only 50% of APD's were drilled in Utah with 92% of the wells drilled going into production. For the same 5-year period there has also been an average of 183 wells per year that were plugged. Using this information, it is assumed that of the 231 approved APD's at the beginning of 2020 that have not been drilled yet, approximately 116 wells will be drilled with 107 of them going into production. Factoring in the wells plugged each year results in a net decrease of 76 operating wells. Multiplying these numbers with statewide single well emissions factors (see AMR (BLM 2020)) results in construction emissions 88,997 MT CO₂e, and a statewide average decrease in operation and combustion emissions of 42,154 MT CO₂e/yr and 195,631 MT CO₂e/yr respectively.

Long-term foreseeable GHG emissions estimates from oil and gas wells in Utah are estimated by applying U.S. Energy Information Administration (EIA) projected growth rates for oil and gas production to the 2019 baseline emissions estimates in Table 9. The high and low oil price scenarios for the Rocky Mountain region are used from the EIA 2020 Annual Energy Outlook (EIA 2020) to provide a range of future oil and gas production growth in Utah. Since GHG emissions are roughly parallel to production volumes (USGS 2018), the EIA growth projections are applied to the base year construction, operation, and combustion emissions to estimate total annual GHG emissions each year through the year 2050. From 2020 to 2050, the annual average oil and gas related emissions in Utah are estimated to range from 35.04 to 42.74 MMT CO₂e/yr, with aggregate emissions between 1,086.27 to 1,325.05 MMT CO₂e/yr. Field office level emissions are provided in the AMR (BLM 2020). Assuming the distribution of wells remains the same for each mineral lease type (Federal, State, Tribal Private), approximately 55% of the emissions would result from Federal leases.

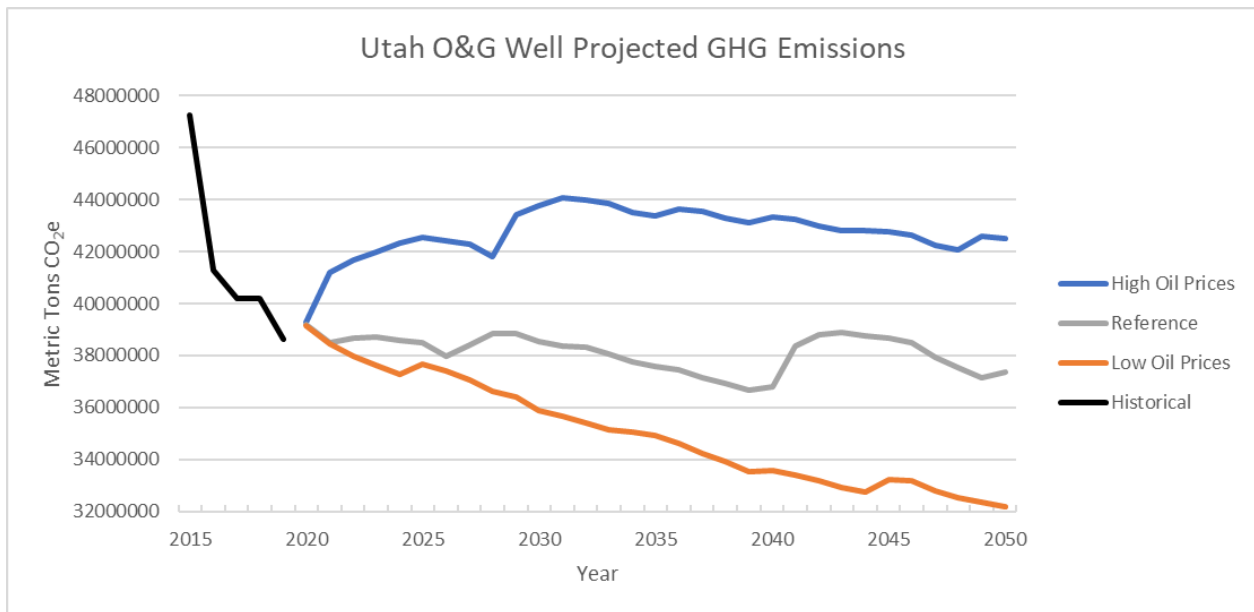


Figure 4. Estimated future GHG emissions from oil and gas wells in Utah, based on EIA projected oil and gas production for the Rocky Mountain region (EIA 2020).

Information from BLM’s Greenhouse Gas and Climate Change Report (Golder 2017) provides projections of foreseeable GHG emissions from BLM fossil fuel mineral leasing. This report calculated GHG emission estimates for normal and high energy development scenarios for each state with federal fossil mineral resources managed by the BLM, including Utah. National Federal GHG emission from coal, oil, natural gas, and liquid natural gas are projected to decrease from the baseline year (2014) by 24.3% and 21.3%, respectively for the 2030 future year normal and high scenarios. Utah’s contribution to regional (Colorado, New Mexico, Utah, and Wyoming) Federal GHG emission increases to 5.7% and 5.6% of the 2030 normal and high scenarios respectively. Utah’s contribution to national Federal GHG emission is projected to be 5.3% for both the 2030 normal and high scenarios.

The U.S. Energy Information Administration (EIA) (EIA 2020) provides projections of energy sector GHG emissions through the year 2050. The EIA national emissions projections are contained in the Annual Energy Outlook report (EIA 2020). In the United States, energy related GHG emissions in the reference scenario are projected to decrease over the short-term (4,674 MMT CO₂ in 2030) as the power sector transitions away from coal, but energy demands from the transportation and industrial sectors will cause emissions increases in later years through 2050 (4,922 MMT CO₂ in 2050). Economic growth is the biggest factor in national GHG emissions projections. For a high economic growth scenario, emissions are 13% higher than the reference scenario in 2050 and the emissions in the low growth scenario are 11% lower than the reference by 2050. The EIA also reports global emissions projections in the International Energy Outlook report (EIA 2019). Worldwide energy related GHG emissions are projected to increase by 0.6% per year from 2018 to 2050. Over the same time period annual energy sector emissions increases from about 35 billion metric tons CO₂e to about 43 billion metric tons CO₂e. GHG emissions from development of lease parcels would add cumulatively to other past, present, and foreseeable oil and gas emissions, as well as emissions from other sectors.

The University of Utah Kem C. Gardner Policy Institute developed The Utah Roadmap: Positive Solutions on Climate and Air Quality (Gardner 2020), which projects future GHG emissions in Utah. The report provides estimates for a “Business as Usual” scenario that considers population and energy demand increases with currently scheduled emissions reduction measures not being implemented, and a “Planned Reduction” scenario that includes foreseeable emissions reductions from the end of life of coal power plants and the increased use of electric vehicles. In the “Business as Usual” scenario, the annual emissions for Utah increase to approximately 95 MMT CO₂e by 2050, or a 32% increase above current emissions, whereas, the “Planned Reduction” scenario shows a decrease in Utah emissions to approximately 32 MMT CO₂e by 2050, which is about a 55% decrease below current emissions. The roadmap set a goal to reduce GHG emissions to about 15 MMT CO₂e, approximately 80% below current emissions, but additional action by the State of Utah is needed to reach this goal.

The IPCC developed various emissions scenarios, called Representative Concentration Pathways (RCP) (IPCC 2018), to provide a consistent foundation for climate change modeling and impact assessment. The RCP’s are a set of GHG emissions and concentrations trajectories based on potential future energy use, population, and changes to air pollution and land use. There are four scenarios named after the amount of radiative forcing in watts per square meter (RCP2.6, RCP4.5, RCP6, and RCP8.5) that is projected to occur by the year 2100 if actual atmospheric concentrations of GHG’s follow one of these paths. There are several other pathways that lead to each level of radiative forcing, but these four RCPs provide plausible emissions paths for assessing the range of possible changes to the climate. Figure 5 shows the different RCP emissions scenarios (bold lines) though the year 2100. Global energy related GHG emissions projections tack closest to RCP6.0 and RCP4.5 though mid-century. The Greenhouse Gas and Climate Change Report (Golder 2017) compares nationwide derived future year BLM GHG emissions profiles with RCPs. In year 2020, the BLM (nationally) normal and high emissions scenarios track closest to RCP 8.5 in 2020 and between RCP 2.5 and RCP 4.5 in 2030.

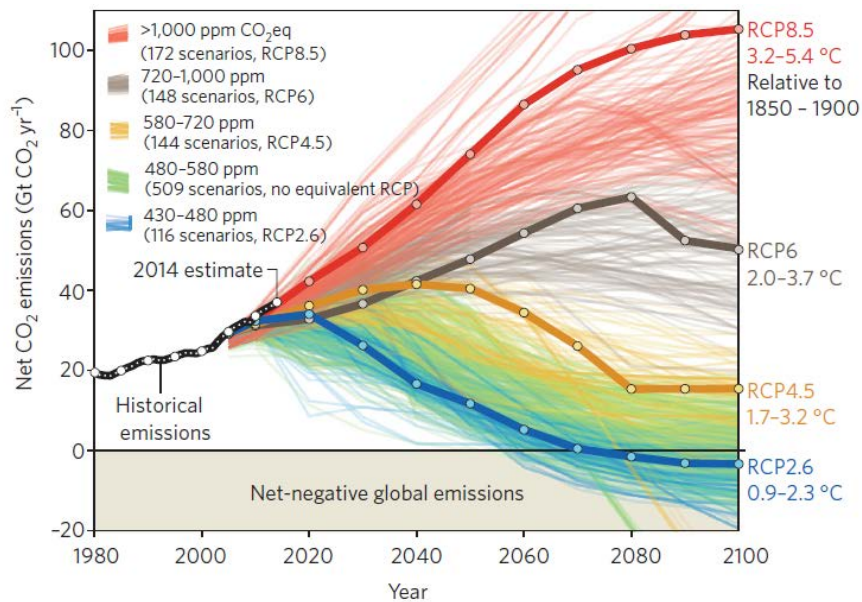


Figure 5. GHG emissions pathways for lead to radiative forcing of 8.5 W/m² (red), 6.0 W/m² (gray), 4.5 W/m² (yellow), and 2.6 W/m² (blue) by the year 2100. Source of figure: (Fuss, et al. 2014)

Climate Change

The U.S. Geological Survey National Climate Change Viewer (USGS 2019) can be used to evaluate potential climate change at the state and county level. Data presented in the climate viewer is intended to assist the scientific community in conducting studies on climate changes and to enhance public understanding of possible future climate impacts to their local communities. The viewer provides historical (1950-2005) and future (2006-2099) climate projects under a moderate (RCP4.5) and aggressive (RCP8.5) emissions scenario. The climate viewer compiles projections from 30 different global climate models. Projected changes to maximum and minimum temperature and precipitation for Utah are presented in the AMR (BLM 2020) and are summarized here.

For both the RCP8.5 and RCP4.5 GHG emissions scenarios temperatures increase above historical levels by mid-century and 2100. Projections for RCP8.5 begin to deviate from the RCP4.5 projections after mid-century, and depending on the season are approximately 5°F or warmer by 2100. For the RCP4.5 scenario, both maximum and minimum temperatures level off approximately 5°F warmer than historical temperatures, while the RCP8.5 scenario shows a continued increasing trend at year 2100. Projected changes to monthly precipitation for both emission scenarios are minimal (not statistically significant) with respect to historic precipitation but show a slight increase in precipitation for RCP8.5 during the winter. The historical precipitation falls within the upper and lower ranges for all projected estimates of precipitation change. However, both the RCP8.5 and RCP4.5 projections show statistically significant lower amounts of snow water equivalent and runoff for all future time periods. In other words, less snowpack in the winter, more runoff during the winter, and less during the spring and summer. Further, the EPA report on What Climate Change Means for Utah (EPA 2016) states that there may be increased frequency of drought and wildfires, increase the demand for water while reducing the water supply, and increased impacts to human health.

The proposed action may result in emissions of (14.99 MMT CO₂e) over a 30 year period which would be that 1.4% of the low (1,086.27 MMT CO₂e) and 1.1% of the high (1,325.05 MMT CO₂e) aggregate emissions estimates based on EIA projections for oil and gas production growth. While annual GHG operation and combustion emissions would increase statewide emissions by 0.69% and national emissions by 0.0074% (Table 8). All GHGs, regardless of the source, contribute incrementally to the global climate change phenomenon. While GHG emissions resulting from individual decisions can certainly be modified or potentially prevented by analyzing and selecting reasonable alternatives that appropriately respond to the action's purpose and need, the BLM has limited decision authority to meaningfully or measurably prevent the cumulative climate change impacts that would result from global emissions.

The No Action alternative would not contribute to the cumulative emissions or climate change because the subject leases would not continue, and development of those leases would not occur.

3.3.3 Issue 3: What are the potential impacts to social and economic conditions and Environmental Justice?

3.3.3.1 Affected Environment

The study area includes Box Elder, Emery, Duchesne, Grand, Juab, San Juan, Sanpete, Sevier, and Uintah counties in the State of Utah.

Socioeconomics

Because socioeconomic (SE) data are typically available at the county level, county boundaries are used to define the SE study area. Data were obtained from the U.S. Department of Labor, the Bureau of Labor Statistics, local area unemployment statistics, the U.S. Department of Commerce, and the Census Bureau, as compiled by the Headwaters Economics Socioeconomic Profiles Tool developed for the BLM.

Land Ownership

There are 23,999,934 total acres within the study area. Of those, 14,216,732 acres, 59.2 percent of the total, are federally-owned lands, and 10,110,278 of those acres are managed by the BLM. 4,811,309 acres within the study area are privately owned, 2,356,260 are Tribal lands, and 2,615,628 are owned by state, county, city, or other non-federal agencies.

Population, Employment, and Income

The total population in the study area was 209,296 in 2018, representing an increase of 26 percent from 2000 to 2018. The largest contributor to this change in total population was natural change. The number of employed workers in the study area in 2018 was 111,241. In 2019, the average annual unemployment rate was 3.4 percent. From 2000 to 2018, employment increased by 28.3 percent. In 2018, 78.4 percent of workers aged 16 and over within the study area worked in their county of residence. Per capita income in the study area in 2018 was \$35,132, as measured in 2019 dollars, an increase of 30.9 percent from 2000 to 2018.

Poverty, Minorities, and Other Demographic Indicators

In 2018, the total number of people living in poverty, as defined by the U.S. Census Bureau, was 26,189, or 13.1 percent of the population. In the same year, there were 4,870 families living in poverty, or 9.7 percent of all families. Out of all persons living within the study area in 2018, 34,387, or 16.7 percent, self-identified as being a member of a minority group. Of those, 12,672, or 6.1 percent of the total population, self-identified as American Indians. The mean median age within the study area in 2018 was 33.2 years. The total number of housing units was 81,444 of which 80.2 percent were occupied and 9.2 percent were seasonal, recreational, or occasionally-occupied properties. Of those living within the study area aged 25 or older, 18.8 of the total population had earned a bachelor's degree or higher in 2018.

Jobs by Industry

In 2018, there were approximately 30,500 total jobs in non-services industries in the study area. In the same year there were around 60,700 jobs in services related industries, and there were approximately 18,525 additional jobs in the government sector. This total includes federal, state, county, and local government jobs. In 2018, the industries employing the largest numbers of employees in the study area were government (primarily state, county and local government), retail trade, manufacturing, construction, and farming.

Wages by Industry

Within the study area, the average annual wage for all reported jobs was \$39,819 in 2018 (2019 dollars). The highest paying industries, on average, were mining, construction, and federal government.

Non-labor Income

Non-labor income—which includes dividends, interest payments, rent, age-related transfer payments, hardship-related payments, and other transfer payments—can be important in local economies. Where

non-labor income is a relatively high percentage of all income, it is likely that there are a higher number of retirees in comparison to other regions. In 2018, total non-labor income within the study area was \$2,865,971, representing 39 percent of all income, measured in 2019 dollars. The highest category of non-labor income in the same year was dividends, interest, and rent, with \$1,424,345 in total income.

Federal Land Payments

In fiscal year 2018, a total of \$21,992,160 (2019 dollars) was paid by federal land management agencies to state and local governments. Of those payments, \$17,502,548 were Payments In Lieu of Taxes (PILT), and \$475,971, or 2.2 percent of the total, were from the BLM.

Environmental Justice

“Environmental justice” is an initiative that culminated with President Clinton’s February 11, 1994, Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” and an accompanying Presidential memorandum. The Executive order requires that each federal agency consider environmental justice to be part of its mission. Its intent is to promote fair treatment of people of all races and income levels, so no person or group of people bears a disproportionate share of the negative effects from the country’s domestic and foreign programs. Specific to the EIS process, the Executive order requires that proposed projects be evaluated for “disproportionately high adverse human health and environmental effects on minority populations and low income populations.”

The Environmental Protection Agency (EPA) guidelines for evaluating the potential environmental effects of projects require specific identification of minority populations when either: (1) a minority or low-income population exceeds 50 percent of the population of the affected area; (2) a minority or low-income population represents a meaningfully greater increment of the affected population than of the population of some other appropriate geographic unit, as a whole (the BLM typically uses 10 percentage points higher than the state population percentage for this measure); or (3) concentrated populations of American Indians.

Within the study area, all three EJ population types are present in one or more Census Blockgroups, based on analyses completed using the EPA’s EJScreen web mapping tool.

3.3.3.2 Environmental Consequences

Impacts of the Proposed Action

Socioeconomics

The only direct impact of issuing new oil and gas leases on socioeconomic values within the Analysis Area would be generation of revenue from the lease sale, as the State of Utah retains 49 percent of the proceeds. Revenues generated from both competitive and non-competitive oil and gas lease sales (winning bid “bonus” payments) in the study area for calendar year 2019 totaled \$9.8 million; bonus revenues from 2003 to 2019 totaled \$156.9 million. Revenues generated from rents on oil and gas parcels leased but not producing in the study area for calendar year 2019 totaled \$1.4 million; rent payments from 2003 to 2019 totaled \$44.3 million (ONRR 2020). Subsequent oil and gas exploration, development and production could affect the local economy in terms of additional jobs, income and tax revenues. Oil and gas companies typically provide in-house scientists and technicians for most pre-drilling exploration work. Subsequent oil and gas exploration and development activities could include road and drill pad

construction, which could be contracted to local contractors. Wells would typically be drilled over a period of time and not at the same time. The crews, ranging from 20 to 30 people, would spend a portion of their salary (approximately \$200-\$250 per person per day) in local or regional communities for the duration of the project (four to eight weeks).

During development and production phases, the potential for local socioeconomic impacts could increase. More long-term roads and drill pads could be constructed, along with associated support facilities. Typically, most of this work is supplied by local contractors. Local businesses may realize increased revenue from the purchase of supplies, meals, rooms, etc. Local trucking and delivery companies may also experience impacts to revenue due to transporting supplies, building materials, and oil products. These additional economic activities could potentially lead to increases in the cost of living within the regional economy, which would be felt by local residents and businesses not directly tied to the oil and gas industry. Oil production from federal lands is subject to a 12.5 percent royalty payment to the federal government. Half of that amount is provided to the state government, which then provides a portion to the counties.

Economic effects from oil and gas were estimated using IMPLAN regional economic impact modeling software using the most recent available data, which was for calendar year 2018. Because of recent changes in the U.S. and global economies and in the oil and gas sectors in particular, it is understood that none of the figures shown below will accurately reflect current economic conditions. In the future, as more data are made available showing how changes in economic conditions are being felt at state and county levels, updated modeling and analysis will be able to provide more accurate figures and estimates of economic effects (IMPLAN 2020).

Indirect impacts to socioeconomics from oil and gas production would likely be minor, given the RFD scenarios; however, bonus bids (the amount paid at time of auction), annual rent fees (for 10 years regardless of activity on a leased parcel), and royalties (if and when production occurs) may provide substantial income to county governments for schools and other expenditures. The Proposed Action would not be expected to induce substantial growth or concentration of population, displace a large number of people, cause a substantial reduction in employment, reduce wage and salary earnings, cause a substantial net increase in county expenditures, or create a substantial demand for public services. For every \$100,000 in new oil and gas output sold from the economic region, the aggregate economies of the counties in the study area are expected to support approximately 0.5 jobs, \$22,000 in labor income, and \$120,000 in total economic output. With a reduction in output from the oil and gas sector, converse effects would be expected to occur. Increased activity in oil and gas development and operations could have an impact on the demand for community services as well as having some effect on available housing and demand for goods and services within the affected county or counties.

Regional economic effects are typically measured in direct, indirect, and induced impacts:

- Direct effects measure the economic impact of operating expenditures made by one or more economic enterprises within the study area (and within the specific industry or industries included in the study) on labor, materials, supplies, and productive capital.
- Indirect effects measure the purchases of goods and services and the hiring of labor to meet demand for inputs (factors of production) that are purchased within the study area in support of the economic activities accounted for in the direct impacts described above.

- Induced effects measure the economic impact that occurs as a result of household purchases of goods and services by employees of the economic enterprise(s) accounted for in direct impacts.

Multipliers express the total size of the economic effects, calculated by dividing total effects by direct effects. For example, an employment multiplier of 1.4 would mean that for each direct job supported by a specific change in economic activity, that activity would be expected to support an additional 0.4 jobs in indirect and induced employment.

Table 14. Oil and Gas Employment Effects

Oil and Gas (2018 data in 2020 dollars)					
Employment Effects (Marginal number of jobs supported per \$100,000 in new oil and gas production)					
County	Direct Effect	Indirect Effect	Induced Effect	Total Effect	Multiplier
Box Elder	0.6	0.1	0.0	0.7	1.17
Duchesne	0.2	0.1	0.1	0.3	1.87
Emery	0.2	0.0	0.0	0.3	1.33
Grand	0.3	0.1	0.1	0.4	1.72
Juab	0.5	0.2	0.1	0.8	1.55
San Juan	0.1	0.1	0.1	0.3	1.79
Sanpete	0.6	0.1	0.0	0.8	1.25
Sevier	0.2	0.0	0.1	0.3	1.58
Uintah	0.2	0.1	0.1	0.3	2.02
Study Area Mean	0.3	0.1	0.1	0.5	1.59
Labor Income Effects (Marginal labor income supported per \$100,000 in new oil and gas production)					
County	Direct Effect	Indirect Effect	Induced Effect	Total Effect	Multiplier
Box Elder	\$3,836	\$2,866	\$680	\$7,381	1.92
Duchesne	\$17,717	\$4,314	\$2,210	\$24,242	1.37
Emery	\$16,257	\$1,744	\$1,087	\$19,088	1.17
Grand	\$17,146	\$7,260	\$3,796	\$28,203	1.64
Juab	\$22,003	\$11,645	\$2,888	\$36,536	1.66
San Juan	\$18,569	\$2,981	\$1,511	\$23,060	1.24
Sanpete	\$1,866	\$5,476	\$691	\$8,032	4.31
Sevier	\$16,721	\$1,300	\$2,363	\$20,384	1.22

Uintah	\$21,595	\$4,003	\$3,162	\$28,760	1.33
Study Area Mean	\$15,079	\$4,621	\$2,043	\$21,743	1.76
Output Effects (Marginal economic output supported per \$100,000 in new oil and gas production)					
County	Direct Effect	Indirect Effect	Induced Effect	Total Effect	Multiplier
Box Elder	\$100,000	\$11,854	\$2,851	\$114,706	1.15
Duchesne	\$100,000	\$11,206	\$9,405	\$120,612	1.21
Emery	\$100,000	\$6,468	\$6,153	\$112,621	1.13
Grand	\$100,000	\$13,855	\$13,597	\$127,451	1.27
Juab	\$100,000	\$21,128	\$13,373	\$134,501	1.35
San Juan	\$100,000	\$7,703	\$7,055	\$114,758	1.15
Sanpete	\$100,000	\$19,083	\$3,201	\$122,284	1.22
Sevier	\$100,000	\$5,336	\$9,581	\$114,917	1.15
Uintah	\$100,000	\$9,480	\$12,257	\$121,737	1.22
Study Area Mean	\$100,000	\$11,790	\$8,608	\$120,398	1.20

In some parts of the study area, there is concern about effects on recreation and tourism activities due to oil and gas development. Within the economic region, based on 2018 data—the most recent data set available—it is estimated that every \$100,000 in new spending above the existing baseline in recreation and tourism-related industrial sectors would be expected to support an estimated average of 1.2 jobs, \$32,000 in labor income, and \$103,000 in total economic output. A reduction of spending within the same industrial sectors would have opposite effects. Examples of business types included in modeling the economic effects from recreation and tourism spending include gas stations, sporting goods stores, grocery stores, restaurants, hotels and motels, and so on.

The specific economic effects listed above vary widely from county to county within the study area. Where recreation and tourism play a greater role in a county’s economy, the economic effects from an increase or reduction in spending would be greater than in the study area on average. The opposite is also true.

Table 15. Recreation and Tourism Employment Effects

Recreation and Tourism (2018 data in 2020 dollars)					
Employment Effects (Marginal number of jobs supported per \$100,000 in new recreation and tourism spending)					
County	Direct Effect	Indirect Effect	Induced Effect	Total Effect	Multiplier

Recreation and Tourism (2018 data in 2020 dollars)					
Box Elder	1.3	0.2	0.1	1.6	1.24
Duchesne	0.8	0.1	1.0	1.0	1.25
Emery	0.6	0.1	0.0	0.7	1.15
Grand	1.1	0.2	0.2	1.5	1.34
Juab	1.2	0.2	0.1	1.5	1.21
San Juan	1.2	0.2	0.1	1.5	1.21
Sanpete	0.8	0.2	0.1	1.2	1.39
Sevier	1.0	0.1	0.1	1.3	1.23
Uintah	0.7	0.1	0.1	0.9	1.27
Study Area Mean	1.0	0.2	0.2	1.2	1.25
Labor Income Effects (Marginal labor income supported per \$100,000 in new recreation and tourism spending)					
County	Direct Effect	Indirect Effect	Induced Effect	Total Effect	Multiplier
Box Elder	\$30,802	\$4,545	\$3,536	\$38,883	1.26
Duchesne	\$18,484	\$3,792	\$2,249	\$24,525	1.33
Emery	\$12,702	\$2,344	\$904	\$15,950	1.26
Grand	\$34,381	\$6,034	\$6,230	\$46,645	1.36
Juab	\$15,818	\$3,626	\$1,639	\$21,084	1.33
San Juan	\$25,821	\$4,094	\$2,111	\$32,026	1.24
Sanpete	\$31,766	\$4,247	\$3,267	\$39,279	1.36
Sevier	\$20,440	\$3,522	\$3,156	\$27,117	1.37
Uintah	\$30,802	\$4,545	\$3,536	\$38,883	1.26
Study Area Mean	\$24,558	\$4,083	\$2,959	\$31,599	1.31
Output Effects (Marginal economic output supported per \$100,000 in new recreation and tourism spending)					
County	Direct Effect	Indirect Effect	Induced Effect	Total Effect	Multiplier
Box Elder	\$81,656	\$14,373	\$14,818	\$110,847	1.36
Duchesne	\$59,598	\$14,754	\$9,582	\$83,934	1.41
Emery	\$44,304	\$8,878	\$5,111	\$58,293	1.32

Recreation and Tourism (2018 data in 2020 dollars)					
Grand	\$91,671	\$24,745	\$22,303	\$138,718	1.51
Juab	\$85,995	\$18,704	\$7,553	\$112,252	1.31
San Juan	\$96,039	\$13,903	\$9,858	\$119,800	1.25
Sanpete	\$87,175	\$16,265	\$15,110	\$118,549	1.36
Sevier	\$71,665	\$13,643	\$12,798	\$98,105	1.37
Uintah	\$61,975	\$10,823	\$12,178	\$84,976	1.37
Study Area Mean	\$75,564	\$15,121	\$12,146	\$102,831	1.36

Environmental Justice

Because all three types of EJ populations are known to exist within the counties included in the study area, future site development and production on leased parcels will require an additional Environmental Justice assessment to assess and evaluate potential disproportionate adverse impacts on any EJ population(s) present in the project area.

Impacts of the No Action Alternative

Socioeconomics

Under the No Action Alternative, current trends and conditions would continue without the influence of additional changes in oil and gas industry.

Environmental Justice

Under the No Action Alternative it is not anticipated that there would be any specific disproportionate adverse impacts to EJ populations living within the study area.

3.3.3.3 Required Design Constraints/Mitigation Measures

Socioeconomics

There are no required design constrains or mitigation measures under socioeconomics.

Environmental Justice

No disproportionate adverse impacts to EJ populations are anticipated as a direct effect of the Proposed Action. The Environmental Justice Executive Order requires the BLM to minimize and/or mitigate any disproportionate adverse impacts to EJ populations. Should such adverse impacts be anticipated due to future exploration and development activities in connection with any parcels leased under the Proposed Action, these potential effects and any need for minimization or mitigation would be evaluated at the time of those activities.

3.3.3.4 Cumulative Impacts

Socioeconomics

To the extent that separate future activities within the study area affect the county economies included in this analysis, social and economic impacts could be compounded by those activities.

Environmental Justice

Should separate present and/or future actions undertaken by federal or non-federal entities be found to affect EJ populations within the study area, effects that could follow as a result of exploration, development, or production following the Proposed Action, could potentially compound those impacts.

Chapter 4 Consultation and Coordination

4.1 Introduction

The issues included in Section 1.8 identifies those that are analyzed in detail in Chapter 3. The IDPRT Checklist (Appendix D) provides the rationale for issues that were considered but not analyzed further. The issues were identified through the public and agency involvement process described in Sections 4.3 below.

4.1.1 National Historic Preservation Act (NHPA) of 1966

The BLM prepared a cultural resources document for the June 2020 parcels, for which the Utah SHPO concurred on the BLM's the finding of "No Adverse Effect." The BLM is preparing an additional cultural resources report for the parcels nominated for the September 2020 sale to document its reasonable and good faith effort to identify effects this undertaking may have on historic properties, as required by Section 106 of the National Historic Preservation Act of 1966 (54 U.S.C 306108).

Agreement:

- State Protocol Agreement Between the Utah State Director of the Bureau of Land Management and the Utah State Historic Preservation Office Regarding the Manner in which the BLM Will Meet its Responsibilities Under the National Historic Preservation Act as provided for in the National Programmatic Agreement (January 2020)

The Advisory Council for Historic Preservation's (ACHP) document titled Meeting the "Reasonable and Good Faith" Identification Standards in Section 106 Review, from https://www.achp.gov/sites/default/files/guidance/2018-05/reasonable_good_faith_identification.pdf outlines the steps to determine when a reasonable and good faith identification effort has been met. The ACHP states:

- Prior to beginning the identification stage in the Section 106 process, the regulations (at 36 CFR § 800.4) require the federal agency to do the following:
- Determine and document the APE [Area of Potential Effect] in order to define where the agency will look for historic properties that may be directly or indirectly affected by the undertaking;
- Review existing information on known and potential historic properties within the APE, so the agency will have current data on what can be expected, or may be encountered, within the APE;
- Seek information from others who may have knowledge of historic properties in the area. This includes the State Historic Preservation Officer (SHPO)/Tribal Historic Preservation Officer (THPO) and, as appropriate, Indian tribes or Native Hawaiian organizations who may have concerns about historic properties of religious and cultural significance to them within the APE.

Following these initial steps, the regulations (36 CFR § 800.4(b) (1)) set out several factors the agency must consider in determining what is a "reasonable and good faith effort" to identify historic properties:

Take into account past planning, research and studies; the magnitude and nature of the undertaking and the degree of federal involvement; the nature and extent of potential effects on historic properties; and the likely nature and location of historic properties within the APE. The Secretary of the Interior's standards and guidelines for identification provide guidance on this subject. The agency official should also consider other applicable professional, state, tribal, and

local laws, standards, and guidelines. The regulations note that a reasonable and good faith effort may consist of or include 'background research, consultation, oral history interviews, sample field investigation, and field survey.'

For lease sales, BLM's identification efforts include: (1) completing a comprehensive "records review," which is an intensive review and analysis of available pertinent cultural resource records and information for each parcel and the surrounding areas that are included in the undertaking APE; and (2) proactively seeking information from others who may have knowledge of historic properties in the area. The BLM's identification efforts described in the report for the June 2020 and September 2020 lease sale undertakings are consistent with the direction provided in multiple Interior Board of Land Appeals (IBLA) decisions/orders, including Mandan, Hidatsa, and Arikara Nation, 164 IBLA 343 (2005), Southern Utah Wilderness Alliance, IBLA 2008-264 (2009), and Southern Utah Wilderness Alliance, IBLA 2002-334.

In association with the June 2020 parcels, the BLM invited the following Native American tribes to participate in Government to Government consultations via certified letter sent January 13, 2020: All Pueblo Council of Governors, Cedar Band of Paiutes, Colorado River Indian Tribes, Confederated Tribes of the Goshute, Eastern Shoshone Tribe, Indian Peaks Band of Paiutes, Jicarilla Apache Nation, Kaibab Band of Paiute Indians, Kanosh Band of Paiutes, Moapa Band of Paiute Indians, Navajo Nation, Navajo Nation, Aneth Chapter, Navajo Nation, Dennehotso Chapter, Navajo Nation, Kayenta Chapter, Navajo Nation, Mexican Water Chapter, Navajo Nation, Navajo Mountain Chapter, Navajo Nation, Oljato Chapter, Navajo Nation, Red Mesa Chapter, Navajo Nation, Shonto Community Governance, Navajo Nation, Teec Nos Pos Chapter, Navajo Utah Commission, Northwest Band of Shoshone Nation, Ohkay Owingeh, Paiute Indian Tribe of Utah, Pueblo of Acoma, Pueblo of Cochiti, Pueblo of Isleta, Pueblo of Jemez, Pueblo of Kewa (Santo Domingo), Pueblo of Laguna, Pueblo of Nambe, Pueblo of Ohkay Owingeh, Pueblo of Picuris, Pueblo of Pojoaque, Pueblo of San Felipe, Pueblo of San Ildefonso, Pueblo of Sandia, Pueblo of Santa Ana, Pueblo of Santa Clara, Pueblo of Taos, Pueblo of Tesuque, Pueblo of Ysleta del Sur, Pueblo of Zia, Pueblo of Zuni, San Juan Southern Paiute Tribe, Shivwits Band of Paiutes, Shoshone-Bannock, Skull Valley Band of Goshute Indians, Southern Ute Indian Tribe, The Hopi Tribe, Uintah and Ouray Ute Tribe, Ute Indian Tribe, Ute Mountain Ute Tribe, and White Mesa Ute.

On December 18, 2019, UTSO BLM posted data and instructions on ePlanning for consulting parties to request National Historic Preservation Act (NHPA) consulting party status on the June 2020 Lease Sale. The BLM did not receive any requests for consulting party status by members of the public or individuals or organizations with a demonstrated interest in the undertaking.

In respect to the September 2020 nominated parcels, the BLM invited the following Native American tribes to participate in Government to Government consultations via a certified letter sent April 3, 2020: All Pueblo Council of Governors, Battle Mountain Band Te-Moak Tribe of Western Shoshone, Colorado River Indian Tribes, Confederated Tribes of the Goshute, Eastern Shoshone, Elko Band Council Te-Moak Tribe of Western Shoshone, The Hopi Tribe, Jicarilla Apache Nation, Kaibab Band of Paiute Indians, Moapa Band of Paiute Indians, The Navajo Nation, Northwestern Band of Shoshone, Paiute Indian Tribe of Utah, Pueblo of Acoma, Pueblo of Cochiti, Pueblo of Isleta, Pueblo of Jemez, Pueblo of Kewa (Santo Domingo), Pueblo of Laguna, Pueblo of Nambe, Pueblo of Ohkay Owingeh, Pueblo of Picuris, Pueblo of Pojoaque, Pueblo of San Felipe, Pueblo of San Ildefonso, Pueblo of Sandia, Pueblo of Santa Ana, Pueblo of Santa Clara, Pueblo of Taos, Pueblo of Tesuque, Pueblo of Ysleta del Sur, Pueblo of Zia, Pueblo of

Zuni, San Juan Southern Paiute, Shoshone-Bannock, Skull Valley Band of Goshute Indians, Southern Ute Tribe, Southfork Band Council Te-Moak Tribe of Western Shoshone, Te-Moak Tribe of Western Shoshone, Ute Indian Tribe, Ute Mountain Ute Tribe, Wells Band Council Te-Moak Tribe of Western Shoshone, White Mesa Ute, and Zia Pueblo.

The BLM received a response from the Paiute Indian Tribe of Utah on April 15, 2020 stating the tribe did not have any objection to the proposed undertaking. The Ysleta del Sur Pueblo responded on June 1, 2020 stating they did not have any comments on the proposed undertaking.

The Hopi Tribe responded on April 17th requesting additional consultation, including a copy of the draft cultural resources report. The completed draft report was sent to the Hopi for review and comment on June 15, 2020.

On July 13, The Hopi Tribe responded and said they disagreed with BLM's determination of No Adverse Effect. In addition, they said due to the pandemic they are unable to adequately conduct review and government to government consultation of the September Lease Sale. They requested the September Lease Sale to be cancelled.

The BLM also received correspondence from the Pueblo of Santa Ana on August 3, 2020, in which the Pueblo objected to the contents of the initial consultation letter. The UTSO BLM also sent invitations to potential National Historic Preservation Act (NHPA) consulting parties on April 3, 2020. Invitations were sent to Friends of Cedar Mesa, the Utah Rock Art Research Association, the School and Institutional Trust Lands Administration, the Public Land Policy Coordination Office, the Old Spanish Trail Administration, the Utah Professional Archaeological Council, the Utah Statewide Archaeological Society, LDS Church History, Box Elder County, Juab County, San Pete County, Sevier County, Emery County, Duchesne County, Grand County, Uintah County, and San Juan County. At this time the Utah Rock Art Research Association, Duchesne County, Juab County, and San Juan County requested consulting party status. The National Parks Conservation Association requested consulting party status via letter on July 13, 2020. While the BLM did not receive any comments on the draft cultural resources report during the consultation period, the National Parks Conservation Association responded on July 27, 2020 stating their disagreement with the BLM's finding of effect and stated that BLM did not conduct meaningful tribal consultation.

On August 3, 2020, BLM sought concurrence regarding its determination of affect in the September 2020 Lease Sale Cultural Resources Report with Utah SHPO. On August 4, 2020, BLM received concurrence from SHPO.

4.2 Persons, Groups, and Agencies Contacted/Consulted

Persons, agencies, and organizations that were contacted or consulted during the preparation this EA are identified in Table 16 and Table 17.

4.2.1 Endangered Species Act of 1973

The effects of Oil and Gas leasing development on T&E species were analyzed through Section 7 consultation on, as follows:

- Moab RMP: 2008 (Cons. # 6-UT-08-F-0022)
- Moab MLP: 2016 (Cons. # 6-UT-16-F-0223), Lease Notices applied throughout Moab FO

through RMP Maintenance

- 2019 Informal to cover *Pediocactus despainii* within Moab FO
- Monticello RMP: 2008 (Cons. # 6-UT-08-F-0024)
- Price RMP: 2008 (Cons. # 6-UT-08-F-0026)
- 2018 Informal to cover the Experimental Population of California Condor within Price FO
- Richfield RMP: 2008 (Cons. # 6-UT-08-F-059)
- 2018 Informal to cover Colorado River Fish within Richfield FO
- Vernal RMP: 2008 (Cons. # 6-UT-08-F-0025)
- Ongoing Informal Consultation to incorporate lease notices for Jones cycladenia within Richfield FO and Yellow-billed cuckoo within Price and Richfield FOs.

During the consultations, Lease Notices to inform the potential lessees of the potential that T&E species may be affected by oil and gas activities were developed and have been attached to parcels as appropriate. The September 2020 lease action is in compliance with T&E species management outlined in accordance with the requirements under the FLMPA and the NEPA.

While Federal regulations and policies require the BLM to make its public land and resources available on the basis of the principle of multiple-use, it is BLM policy to conserve special status species and their habitats, and to ensure that actions authorized by the BLM do not contribute to the need for the species to become listed as T&E by the USFWS.

For lease sales conducted on listed species covered by these consultation actions, the BLM regularly coordinates with the USFWS to assure agreement that the Proposed Action (leasing): 1) does not exceed the impacts analyzed in the existing consultations; and 2) would not exceed the effects contained in the associated USFWS concurrences with BLM's Not Likely to Adversely Affect (NLAA) determinations.

- June 2020
 - Lease notice provided to USFWS: December 18, 2019
 - Email with preliminary shapefiles: December 18, 2019
 - Additional information supporting determination: February 6-7, 2020
 - NLAA Agreement: February 10, 2020

The USFWS concurred with the NLAA determination on February 10, 2020. When or if disturbance is proposed for parcels (APD stage) that contain or affect ESA species, further evaluation and Section 7 consultation of these ESA species with the USFWS will occur as necessary.

- September 2020
 - Lease notice provided to USFWS: April 2, 2020
 - Email with preliminary shapefiles: April 1, 2020
 - USFWS Agreement with BLM Determinations: July 27, 2020

When or if disturbance is proposed for parcels (development stage) that contain or affect ESA species, further evaluation and Section 7 consultation of these ESA species with the USFWS will occur as necessary.

Table 16. List of Contacts and Findings

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
Advisory Council on Historic Preservation	Resolution of Disputed Finding of Effect for Section 106 of the National Historic Preservation Act	Coordination is ongoing. A tribe and consulting party has objected to BLM’s finding of effect, triggering consultation with the Advisory Council on Historic Preservation.
National Park Service	Coordinated with as a potential Stakeholder in the affected lands.	A memorandum transmitting the preliminary list of parcels was sent on April 2, 2020, followed up the next day with an email including GIS shapefiles. The BLM coordinated with the NPS Air Resources Division on April 13 to April 17, 2020. The BLM and NPS Air Resource Division discussed incorporating by reference the analysis from similar actions such as the Moab MLP, West Fertilizer Project, and the December 2019 lease sale. At that time, the NPS Air Resources Division did not request any additional new air analysis for the September parcels. On July 10, 2020, the NPS sent an email requesting continued coordination.
United States Fish and Wildlife Service	Coordinated/consulted with for compliance with the Endangered Species Act.	A memorandum transmitting the preliminary list of parcels was sent on April 2, 2020. Emails were sent on transmitting the corresponding shapefiles on April 1, 2020 and additional information on May 1, 2020. The USFWS agreed with the NLAA determination on July 28, 2020. Refer to section 4.2.1.
United States Forest Service	Coordinated with as a potential Stakeholder in the affected lands.	A letter transmitting the preliminary list of parcels was sent on April 2, 2020. Comments or concerns were not expressed.
Public Lands Policy Coordination Office (PLPCO)/ Utah Division of Wildlife Resources (UDWR)	Coordinated with as leasing program partner.	Letters transmitting the preliminary list of parcels were sent on April 2, 2020. An e-mail with GIS shapefiles was sent to UDWR on April 14, 2020, to satisfy the requirements of IM-2012-43. Comments were submitted during the public comment period. The comments are located in Appendix I. PLPCO supports the concerns of Moab City and Grand County. All parcels within Grand and

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
		San Juan Counties have been deferred from the September 2020 lease sale to allow time for further review and analysis.
State Institutional Trust Lands Administration	Coordinated with as a potential Stakeholder in the affected lands.	A letter transmitting the preliminary list of parcels was sent on April 2, 2020. Comments or concerns were not expressed.
State Historic Preservation Office and Consulting Parties	Consultation as required by NHPA (16 USC 470)	The BLM initiated consultation with the State Historic Preservation Office on April. 8, 2020. On August 3, 2020, the BLM submitted the cultural resources report for the September 2020 Oil and Gas lease sale to the SHPO for review of BLM’s finding of No Adverse Effect. On August 4, 2020 SHPO concurrence was received.
Various Tribal Governments (see section (see section 4.2)	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1996) and NHPA (16 USC 470)	<p>On April 3, 2020 UTISO sent an invitation to consult letter to each tribe listed in the above section. The Hopi Tribe responded on April 13, 2020 and requested a copy of the completed cultural resources report. The Paiute Indian Tribe of Utah responded on April 15, 2020 stating they did not have any concerns related to the lease of the proposed parcels.</p> <p>On July 13, The Hopi Tribe responded and said they disagreed with BLM’s determination of No Adverse Effect. In addition, they said due to the pandemic they are unable to adequately conduct review and government to government consultation of the September Lease Sale. They requested the September Lease Sale to be cancelled.</p> <p>Coordination and consultation will continue up until the lease auction, at the request of any tribe.</p>
Moab City, Grand County, and Duchesne County	Coordinated with as a leasing program partner.	On April 24, 2020, Moab City requested to be a cooperating agency on the September Lease Sale EA. On May 6, 2020, Grand County requested to be a cooperating agency. Coordination with the cities and counties is delegated to the local Field Manager. Coordination with the county and city also occur

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
		<p>through PLPCO. The BLM did deny Grand County and Moab City’s request to be a cooperating agency on the September Lease Sale EA on May 27, 2020. The BLM stated in the letter that “</p> <p>The letter identifies potential conflicts between nominated lease parcels in Grand County and recreation tourism that the County believes should be analyzed in the EA. Specifically, the letter expresses concern that leasing parcels near popular recreation areas may affect regional tourism and Grand County’s economy. These concerns will be addressed in the EA, as appropriate, by the Moab Field Office socioeconomic specialist with local expertise, as well as by the BLM Utah State Office socioeconomic specialist. A socioeconomic analysis for the September 2020 oil and gas lease sale will be included in the EA.”</p> <p>Moab City, Grand County and Duchesne County submitted public comments during the public comment period. The comments are located in Appendix I. Moab City and Grand County requested that all parcels located in Grand County to be removed from the September Lease Sale. Duchesne County was in support of leasing parcels within its county. The concerns Moab City and Grand County have were also raised through the PLPCO process. All parcels within Grand and San Juan Counties have been deferred from the September 2020 lease sale to allow time for further review and analysis.</p>

Table 17. List of Contacts and Findings for the Parcels Previously in June

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
National Park Service	Coordinated with as a potential Stakeholder in the affected lands.	A memorandum transmitting the preliminary list of parcels was sent on January 3, 2020, followed up on January 6, 2020 with an email including GIS shapefiles. As a result of subsequent coordination, BLM added two lease notices to parcel 136 addressing the NPS’s concerns about the Old Spanish Trail.
United States Fish and Wildlife Service	Coordinated/consulted with for compliance with the Endangered Species Act.	A memorandum transmitting the preliminary list of parcels was sent on January 3, 2020. Emails were sent on transmitting the corresponding shapefiles on December 18, 2019, with additional information provided. The USFWS agreed with the BLM determinations on February 10, 2019. Refer to section 4.2.1.
United States Forest Service	Coordinated with as a potential Stakeholder in the affected lands.	A letter transmitting the preliminary list of parcels was sent on January 3, 2020. Comments or concerns were not expressed. Coordination is ongoing.
Public Lands Policy Coordination Office (PLPCO)/ Utah Division of Wildlife Resources	Coordinated with as a leasing program partner.	Letters transmitting the preliminary list of parcels were sent on January 3, 2020. An e-mail with GIS shape-files was sent to UDWR on February 5, 2020, to satisfy the requirements of IM-2012-43. Comments were submitted during the public comment period. The comments are located in Appendix H.
State and Institutional Trust Lands Administration	Coordinated with as a potential Stakeholder in the affected lands.	A letter transmitting the preliminary list of parcels was sent on January 3, 2020. Coordination is ongoing.
State Historic Preservation Office and Consulting Parties	Consultation as required by NHPA (16 USC 470)	On April 22, 2020, the BLM Utah State Office submitted a finding of “No Adverse Effect” for this undertaking to the Utah State Historic Preservation Office (SHPO). The SHPO concurred with BLM’s finding of effect via letter

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
		on April 23, 2020. The BLM received no requests for consulting party status under Section 106 of the NHPA for this undertaking.
Various Tribal Governments (see section 4.2)	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1996) and NHPA (16 USC 470)	On January 13, 2020, UTSO sent a consultation invitation to each tribe. At this time, no tribes have responded to the invitation to consult. Coordination and consultation will continue up until the lease sale, at the request of any tribe. On February 3, 2020, the Hopi tribe requested a copy of the cultural resources report. On February 12, 2020, the BLM received an email from Pueblo of Santa Ana opposing any lease sales that may affect any cultural resources. On February 14, 2020 the Southern Ute Indian Tribe requested additional information. The BLM responded to each tribe via certified letters sent on March 9, 2020. The Hopi Tribe responded on April 20, 2020, expressing concern with the amount of previous cultural resource survey conducted within the proposed parcel and recommended the BLM cancel the June 2020 lease sale. On August 3, 2020 the Pueblo of Santa Ana responded to the BLM stating to their objections to the language of the initial consultation letter.
Grand County	Coordinated with as a leasing program partner.	Coordination ended. The June Lease Sale was cancelled, and the 4 parcels were moved into the September Lease Sale.

4.3 Public Participation

Scoping Period

The UTSO sent letters/memorandum to the following stakeholders: the National Park Service (NPS), the United States Fish and Wildlife Service (USFWS), the United States Forest Service (USFS) and the State of Utah's Public Lands Policy Coordination Office (PLPCO), Division of Wildlife Resources (UDWR) and the School Institutional Trust Lands Administration (SITLA) to notify them of the pending lease sale, solicit comments and concerns on the preliminary parcel list. The BLM also provided GIS shapefiles depicting the proposed sale parcels to contact points within the NPS and UDWR. Consultation and coordination efforts are summarized in Table 16 and 17.

Comment Period

As introduced in Section 1.2, the preliminary EA and the unsigned Finding of No Significant Impact (FONSI) for the June Lease Sale were posted and made available for a 30-day public review and comment period on February 25, 2020. This announced the 30-day comment period (February 25 to March 26, 2020) for this lease sale. The documents were made available online at the Utah State Office's Oil and Gas Leasing Webpage and the BLM's NEPA Register.

Section 4.3.1 will identify changes to this EA that were made as a result of public comments and internal review. Comments and BLM's responses to each of the comment letters will be shown in Appendix H.

Six comment letters were received. Four comment letters were non-substantive comments as defined in the NEPA Handbook, H-1790-1, (section 6.9.2), and the two comment letters did have substantive comments. The comment letters and the BLM's responses to the points made in the letters will be contained in Appendix H.

The preliminary EA and the unsigned Finding of No Significant Impact (FONSI) for the September Lease Sale were posted and made available for a 30-day public review and comment period on June 9, 2020. This announced the 30-day comment period (06/09/2020-07/09/2020) for this lease sale. The documents were made available online at the Utah State Office's Oil and Gas Leasing Webpage and the BLM's NEPA Register.

Section 4.3.1 will identify changes to this EA that were made as a result of public comments and internal review. Comments and BLM's responses to each of the comment letters will be shown in Appendix I.

The BLM received 372 comment letters. Three hundred thirty-seven (337) comment letters were non-substantive comments as defined in the NEPA Handbook, H-1790-1, (section 6.9.2.), and the other 35 comments letters did have substantive comments. The comment letters and BLM's responses to the points made in the letters will be contained in Appendix I. Minor changes to this EA may be made as a result of some comments that will be received during the 30-day public comment period.

NHPA Coordination

For the four (4) parcels from the June Lease Sale, on December 18, 2019, the BLM posted an invitation on the BLM NEPA Register to interested parties to consult in order to satisfy the public involvement requirements under Section 106 of the National Historic Preservation Act (NHPA) [16 U.S.C. 470(f) pursuant to 36 CFR 800.2(d)(3)]. The BLM has not received any consultation requests from members of the public or individuals or organizations with a demonstrated interest in the undertaking at this time.

The BLM will consult with Indian tribes on a government-to-government basis in accordance with Executive Order 13175 and other policies, if requested by any Tribe. If Tribal concerns are identified, including impacts on Indian trust assets and potential impacts to cultural resources, they will be given due consideration. BLM will provide a copy of the June 2020 Cultural Resources Report to Tribes who have requested consulting party status.

For the 99 parcels nominated for the September Lease Sale, on April 3, 2020, the BLM mailed letters to interested parties to consult in order to satisfy the public involvement requirements under Section 106 of the National Historic Preservation Act (NHPA) [16 U.S.C. 470(f) pursuant to 36 CFR 800.2(d)(3)]. The BLM has not received any consultation requests from members of the public or individuals or organizations with a demonstrated interest in the undertaking at this time.

The BLM will consult with Indian tribes on a government-to-government basis in accordance with Executive Order 13175 and other policies, if requested by any Tribe. If Tribal concerns are identified, including impacts on Indian trust assets and potential impacts to cultural resources, they will be given due consideration. BLM will provide a copy of the September 2020 Cultural Resources Report to Tribes who have requested consulting party status.

Modifications Based on Public Comment and Internal Review

The public comment period and corresponding internal review identified necessary corrections or clarifications to this EA.

1. 54 parcels were removed from the Lease Sale, updates were made in Appendix D.
2. Parcel number and acreages were updated.
3. Appendix A and Appendix B were updated to reflect the final stipulations and notices for the nominated parcels.
4. Minor grammar, spelling, and formatting changes were made in the document.
5. Modifications were made to the analysis in section 3.3.2 and Appendix E to clarify methods and calculations for greenhouse gases.
6. Updates and clarifications were made to Appendix E.
7. Dates were updated in Table 16.
8. Two figures were added to Appendix K.

4.4 Preparers

An IDPRT prepared the document and analyzed the impact of the proposed action upon the various resources (Table 15). They considered the affected environment and documented their determination in the IDPRT Checklist (Appendix D – Interdisciplinary Parcel Review Team Checklist). Only those resources that would likely be impacted were carried forward into the body of the EA for further analysis.

Table 18. Preparers of This EA.

Name	Title	Responsible for the Following Section(s) of this Document
[Vacant]	Natural Resource Specialist	Project Lead, Oil and Gas Leasing Program Coordinator
Nicole Lohman	Archaeologist	Oil and Gas Leasing Program, NHPA Compliance
Dave Cook	Natural Resource Specialist	Oil and Gas Leasing Program, Wildlife
Angela Wadman	Natural Resource Specialist	Oil and Gas Leasing Program, NEPA Compliance
Sheri Wysong	Natural Resource Specialist	Oil and Gas Leasing Program, NLCS and Recreation
Jared Dalebout	Hydrologist	Oil and Gas Leasing Program, Wetland, Riparian, Hydrology
Jared Reese	Wildlife Biologist	Oil and Gas Leasing Program, Greater Sage-Grouse
Aaron Roe	Botanist	Oil and Gas Leasing Program, USFWS Consultation
Erik Vernon	Air Quality Specialist	Oil and Gas Leasing Program, Air Quality; Greenhouse Gases.
Julie Suhr Pierce	Great Basin Socioeconomic Specialist	Oil and Gas Leasing Program, Socioeconomics, Environmental Justice
Melinda Moffitt	Acting Fluid Minerals Branch Chief	Oil and Gas Leasing Program Review and Oversight

All specialists that reviewed the parcels are identified in Appendix D – Interdisciplinary Parcel Review Team Checklist.

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Chapter 6 Appendices

- A. Parcel List with Stipulations and Notices
- B. Stipulations and Notices
- C. Figures (Maps)
- D. Interdisciplinary Parcel Review Team Checklist
- E. Air Quality and Green House Gas Information and Calculations
- F. Acronyms/Abbreviations
- G. Reasonably Foreseeable Development Scenario
- H. Comments and Responses

Appendix A – Parcel List with Stipulations and Notices

In addition to the parcel specific Stipulations and Notices listed below, the stipulations and notices presented in this table would be applied to **ALL** parcels:

Stipulations	Notices
Cultural Resources Protection (Handbook H-3120-1)	Notice to Lessee (MLA)
Threatened & Endangered Species Act (Handbook H-3120-1)	

UT 0920 - 004 T. 14 S., R. 1 W., SLM Sec. 30: Lot 33; Sec. 31: Lots 1-4, 15-22, 32-36, E2. 1,040.00 Acres Juab County, Utah Fillmore Field Office	
Stipulations	Notices
UT-S-234: TL – Crucial Deer Winter Range	UT-LN-44: Raptors
UT-S-263: TL – Crucial Raptor Nesting Area	UT-LN-45: Migratory Bird
UT-S-275: CSU/TL – Bald Eagles	UT-LN-49: Utah Sensitive Species
	UT-LN-53: Riparian Areas
	UT-LN-59: Erodible Soils and Steep Slopes
	UT-LN-60: Steep Slopes
	UT-LN-72: High Potential Paleontological Resources
	UT-LN-96: Air Quality Mitigation Measures
	UT-LN-99: Regional Ozone Formation Controls
	UT-LN-101: Air Quality
	UT-LN-102: Air Quality Analysis
	UT-LN-107: Bald Eagle
	UT-LN-128: Floodplain Management
	UT-LN-156: Pollinators and Pollinator Habitat

UT0920 - 005 T. 15 S., R. 1 W., SLM Sec. 7: All; Sec. 8: Lot 1, NENW, S2NW, NESW, SWSW. 891.88 Acres Juab County, Utah Fillmore Field Office	
Stipulations	Notices
UT-S-234: TL – Crucial Deer Winter Range	UT-LN-44: Raptors
UT-S-263: TL – Crucial Raptor Nesting Area	UT-LN-45: Migratory Bird
UT-S-275: CSU/TL – Bald Eagles	UT-LN-49: Utah Sensitive Species
	UT-LN-53: Riparian Areas
	UT-LN-59: Erodible Soils and Steep Slopes
	UT-LN-60: Steep Slopes
	UT-LN-72: High Potential Paleontological Resources
	UT-LN-96: Air Quality Mitigation Measures
	UT-LN-99: Regional Ozone Formation Controls
	UT-LN-101: Air Quality
	UT-LN-102: Air Quality Analysis
	UT-LN-107: Bald Eagle
	UT-LN-128: Floodplain Management
	UT-LN-156: Pollinators and Pollinator Habitat

UT0920 - 006 T. 20 S., R. 1 W., SLM Sec. 4: All; Sec. 5: All. 1,289.18 Acres Sanpete County, Utah Richfield Field Office	
Stipulations	Notices
UT-S-01: Air Quality	T&E-09: Utah Prairie Dog
	UT-LN-49: Utah Sensitive Species
	UT-LN-51: Special Status Plants: Not Federally Listed
	UT-LN-72: High Potential Paleontological Resources
	UT-LN-96: Air Quality Mitigation Measures

UT0920 - 006 T. 20 S., R. 1 W., SLM Sec. 4: All; Sec. 5: All. 1,289.18 Acres Sanpete County, Utah Richfield Field Office	
Stipulations	Notices
	UT-LN-99: Regional Ozone Formation Controls
	UT-LN-101: Air Quality
	UT-LN-102: Air Quality Analysis
	UT-LN-128: Floodplain Management
	UT-LN-156: Pollinators and Pollinator Habitat

UT0920 - 007 T. 20 S., R. 1 W., SLM Sec. 8: All; Sec. 9: All; Sec. 17: NE, NENW, S2NW, S2. 1,866.69 Acres Sanpete County, Utah Richfield Field Office	
Stipulations	Notices
UT-S-01: Air Quality	T&E-09: Utah Prairie Dog
	UT-LN-49: Utah Sensitive Species
	UT-LN-51: Special Status Plants: Not Federally Listed
	UT-LN-72: High Potential Paleontological Resources
	UT-LN-96: Air Quality Mitigation Measures
	UT-LN-99: Regional Ozone Formation Controls
	UT-LN-101: Air Quality
	UT-LN-102: Air Quality Analysis
	UT-LN-128: Floodplain Management
	UT-LN-156: Pollinators and Pollinator Habitat

UT0920 - 008 T. 22 S., R. 1 W., SLM Sec. 24: Lots 11-21, 24-48; Sec. 25: Lots 5-7, 9-25. 1,246.95 Acres Sevier County, Utah Richfield Field Office	
Stipulations	Notices
UT-S-01: Air Quality	T&E-09: Utah Prairie Dog
UT-S-111: NSO – Wetland/Hydric Soils	T&E 27: Yellow-Billed Cuckoo
UT-S-121: NSO – Riparian and Wetland Areas	T&E-29: Jones Cycladenia – Potential, Suitable and Occupied Habitat
	UT-LN-49: Utah Sensitive Species
	UT-LN-51: Special Status Plants: Not Federally Listed
	UT-LN-53: Riparian Areas
	UT-LN-96: Air Quality Mitigation Measures
	UT-LN-99: Regional Ozone Formation Controls
	UT-LN-101: Air Quality
	UT-LN-102: Air Quality Analysis
	UT-LN-128: Floodplain Management
	UT-LN-156: Pollinators and Pollinator Habitat

UT0920 - 009 T. 23 S., R. 1 W., SLM Sec. 1: Lots 1-8, 11, 12. 278.46 Acres Sevier County, Utah Richfield Field Office	
Stipulations	Notices
UT-S-01: Air Quality	T&E-09: Utah Prairie Dog
UT-S-111: NSO – Wetland/Hydric Soils	T&E 27: Yellow-Billed Cuckoo
UT-S-121: NSO – Riparian and Wetland Areas	UT-LN-49: Utah Sensitive Species
	UT-LN-51: Special Status Plants: Not Federally Listed
	UT-LN-53: Riparian Areas
	UT-LN-96: Air Quality Mitigation Measures
	UT-LN-99: Regional Ozone Formation Controls

UT0920 - 009 T. 23 S., R. 1 W., SLM Sec. 1: Lots 1-8, 11, 12. 278.46 Acres Sevier County, Utah Richfield Field Office	
Stipulations	Notices
	UT-LN-101: Air Quality
	UT-LN-102: Air Quality Analysis
	UT-LN-128: Floodplain Management
	UT-LN-156: Pollinators and Pollinator Habitat

UT0920 - 010 T. 23 S., R. 1 W., SLM Sec. 14: SW; Sec. 23: W2; Sec. 26: W2, SE; Sec. 35: N2. 1,280.00 Acres Sevier County, Utah Richfield Field Office	
Stipulations	Notices
UT-S-01: Air Quality	T&E-09: Utah Prairie Dog
UT-S-78: NSO – Cemeteries, Culinary Water Sources, Landfill (Existing and Closed), Lands Managed under R&PP Act Leases, Sites Listed on the National Register of Historic Places, Incorporated Municipalities, Developed Recreation Sites, and BLM Administrative Sites.	UT-LN-49: Utah Sensitive Species
	UT-LN-56: Drinking Water Source Protection Zone
	UT-LN-58: Drinking Water Protection Zone
	UT-LN-91: Water and Watershed Protection
	UT-LN-96: Air Quality Mitigation Measures
	UT-LN-99: Regional Ozone Formation Controls
	UT-LN-101: Air Quality
	UT-LN-102: Air Quality Analysis
	UT-LN-128: Floodplain Management
	UT-LN-156: Pollinators and Pollinator Habitat

UT0920 - 011 T. 24 S., R. 1 W., SLM Sec. 4: All; Sec. 5: All; Sec. 6: All; Sec. 8: All; Sec. 9: W2NE, SENE, W2, SE. 2,096.73 Acres Sevier County, Utah Richfield Field Office	
Stipulations	Notices
UT-S-01: Air Quality	T&E 27: Yellow-Billed Cuckoo
UT-S-78: NSO – Cemeteries, Culinary Water Sources, Landfill (Existing and Closed), Lands Managed under R&PP Act Leases, Sites Listed on the National Register of Historic Places, Incorporated Municipalities, Developed Recreation Sites, and BLM Administrative Sites.	UT-LN-49: Utah Sensitive Species
UT-S-111: NSO – Wetland/Hydric Soils	UT-LN-51: Special Status Plants: Not Federally Listed
UT-S-121: NSO – Riparian and Wetland Areas	UT-LN-53: Riparian Areas
	UT-LN-56: Drinking Water Source Protection Zone
	UT-LN-58: Drinking Water Protection Zone
	UT-LN-91: Water and Watershed Protection
	UT-LN-96: Air Quality Mitigation Measures
	UT-LN-99: Regional Ozone Formation Controls
	UT-LN-101: Air Quality
	UT-LN-102: Air Quality Analysis
	UT-LN-128: Floodplain Management
	UT-LN-156: Pollinators and Pollinator Habitat

UT0920 - 012 T. 24 S., R. 1 W., SLM Sec. 7: All; Sec. 17: All; Sec. 18: All. 1,868.84 Acres Sevier County, Utah Richfield Field Office	
Stipulations	Notices
UT-S-01: Air Quality	T&E-09: Utah Prairie Dog
UT-S-78: NSO – Cemeteries, Culinary Water Sources, Landfill (Existing and Closed), Lands Managed under R&PP Act Leases, Sites Listed on the National Register of Historic Places, Incorporated Municipalities, Developed Recreation Sites, and BLM Administrative Sites.	T&E 27: Yellow-Billed Cuckoo
	UT-LN-49: Utah Sensitive Species
	UT-LN-51: Special Status Plants: Not Federally Listed
	UT-LN-56: Drinking Water Source Protection Zone
	UT-LN-58: Drinking Water Protection Zone
	UT-LN-91: Water and Watershed Protection
	UT-LN-96: Air Quality Mitigation Measures
	UT-LN-99: Regional Ozone Formation Controls
	UT-LN-101: Air Quality
	UT-LN-102: Air Quality Analysis
	UT-LN-156: Pollinators and Pollinator Habitat

UT0920 - 018 T. 22 S., R. 2 W., SLM Sec. 1: Lots 1-14, W2SE; Sec. 3: Lots 1, 2, 8; Sec. 11: N2NE, SWNE, W2, SE; Sec. 12: All. 1,966.72 Acres Sevier County, Utah Richfield Field Office	
Stipulations	Notices
UT-S-01: Air Quality	T&E 27: Yellow-Billed Cuckoo

UT0920 - 018 T. 22 S., R. 2 W., SLM Sec. 1: Lots 1-14, W2SE; Sec. 3: Lots 1, 2, 8; Sec. 11: N2NE, SWNE, W2, SE; Sec. 12: All. 1,966.72 Acres Sevier County, Utah Richfield Field Office	
Stipulations	Notices
UT-S-78: NSO – Cemeteries, Culinary Water Sources, Landfill (Existing and Closed), Lands Managed under R&PP Act Leases, Sites Listed on the National Register of Historic Places, Incorporated Municipalities, Developed Recreation Sites, and BLM Administrative Sites.	UT-LN-49: Utah Sensitive Species
UT-S-111: NSO – Wetland/Hydric Soils	UT-LN-53: Riparian Areas
UT-S-121: NSO – Riparian and Wetland Areas	UT-LN-51: Special Status Plants: Not Federally Listed
	UT-LN-56: Drinking Water Source Protection Zone
	UT-LN-58: Drinking Water Protection Zone
	UT-LN 65 Old Spanish Trail
	UT-LN-72: High Potential Paleontological Resources
	UT-LN-91: Water and Watershed Protection
	UT-LN-96: Air Quality Mitigation Measures
	UT-LN-99: Regional Ozone Formation Controls
	UT-LN-101: Air Quality
	UT-LN-102: Air Quality Analysis
	UT-LN-128: Floodplain Management
	UT-LN-156: Pollinators and Pollinator Habitat

<p>UT0920 - 019 T. 22 S., R. 2 W., SLM Sec. 13: Lots 1, 2, S2NW; Sec. 14: N2, SW, W2SE; Sec. 15: SE; Sec. 22: All; Sec. 23: W2NE, SENE, W2, SE; Sec. 24: SWNW, NWSW; Sec. 26: N2NE; Sec. 27: NWNE, N2NW. 2,358.50 Acres Sevier County, Utah Richfield Field Office</p>	
Stipulations	Notices
UT-S-01: Air Quality	T&E 27: Yellow-Billed Cuckoo
	UT-LN-49: Utah Sensitive Species
	UT-LN-51: Special Status Plants: Not Federally Listed
	UT-LN-65 Old Spanish Trail
	UT-LN-72: High Potential Paleontological Resources
	UT-LN-96: Air Quality Mitigation Measures
	UT-LN-99: Regional Ozone Formation Controls
	UT-LN-101: Air Quality
	UT-LN-102: Air Quality Analysis
	UT-LN-128: Floodplain Management
	UT-LN-156: Pollinators and Pollinator Habitat

<p>UT0920 - 020 T. 22 S., R. 2 W., SLM Sec. 27: SWSW; Sec. 28: S2; Sec. 33: N2, SW, N2SE, SWSE; Sec. 34: N2NW. 1,040.00 Acres Sevier County, Utah Richfield Field Office</p>	
Stipulations	Notices
UT-S-01: Air Quality	T&E 27: Yellow-Billed Cuckoo
	UT-LN-49: Utah Sensitive Species
	UT-LN-51: Special Status Plants: Not Federally Listed

UT0920 - 020 T. 22 S., R. 2 W., SLM Sec. 27: SWSW; Sec. 28: S2; Sec. 33: N2, SW, N2SE, SWSE; Sec. 34: N2NW. 1,040.00 Acres Sevier County, Utah Richfield Field Office	
Stipulations	Notices
	UT-LN-72: High Potential Paleontological Resources
	UT-LN-96: Air Quality Mitigation Measures
	UT-LN-99: Regional Ozone Formation Controls
	UT-LN-101: Air Quality
	UT-LN-102: Air Quality Analysis
	UT-LN-128: Floodplain Management
	UT-LN-156: Pollinators and Pollinator Habitat

UT0920 - 021 T. 24 S., R. 2 W., SLM Sec. 1: All; Sec. 12: All; Sec. 13: All. 1,652.04 Acres Sevier County, Utah Richfield Field Office	
Stipulations	Notices
UT-S-01: Air Quality	T&E 27: Yellow-Billed Cuckoo
UT-S-78: NSO – Cemeteries, Culinary Water Sources, Landfill (Existing and Closed), Lands Managed under R&PP Act Leases, Sites Listed on the National Register of Historic Places, Incorporated Municipalities, Developed Recreation Sites, and BLM Administrative Sites.	T&E-29: Jones Cycladenia – Potential, Suitable and Occupied Habitat
	UT-LN-49: Utah Sensitive Species
	UT-LN-56: Drinking Water Source Protection Zone
	UT-LN-58: Drinking Water Protection Zone
	UT-LN-91: Water and Watershed Protection

UT0920 - 021 T. 24 S., R. 2 W., SLM Sec. 1: All; Sec. 12: All; Sec. 13: All. 1,652.04 Acres Sevier County, Utah Richfield Field Office	
Stipulations	Notices
	UT-LN-96: Air Quality Mitigation Measures
	UT-LN-99: Regional Ozone Formation Controls
	UT-LN-101: Air Quality
	UT-LN-102: Air Quality Analysis
	UT-LN-128: Floodplain Management
	UT-LN-156: Pollinators and Pollinator Habitat

UT0920 - 022 T. 24 S., R. 2 W., SLM Sec. 19: Lots 3, 4, SENE, E2SW, SE; Sec. 20: NE, NENW, S2NW, S2; Sec. 29: Lots 1-6, NWNE, NW, S2SE; Sec. 30: Lots 1-4, NE, E2NW, E2SW, N2SE, SWSE. 2,096.90 Acres Sevier County, Utah Richfield Field Office	
Stipulations	Notices
UT-S-01: Air Quality	T&E 27: Yellow-Billed Cuckoo
UT-S-78: NSO – Cemeteries, Culinary Water Sources, Landfill (Existing and Closed), Lands Managed under R&PP Act Leases, Sites Listed on the National Register of Historic Places, Incorporated Municipalities, Developed Recreation Sites, and BLM Administrative Sites.	UT-LN-49: Utah Sensitive Species
UT-S-111: NSO – Wetland/Hydric Soils	UT-LN-53: Riparian Areas
UT-S-121: NSO – Riparian and Wetland Areas	UT-LN-56: Drinking Water Source Protection Zone
	UT-LN-58: Drinking Water Protection Zone
	UT-LN-91: Water and Watershed Protection
	UT-LN-96: Air Quality Mitigation Measures
	UT-LN-99: Regional Ozone Formation Controls

UT0920 - 022	
T. 24 S., R. 2 W., SLM	
Sec. 19: Lots 3, 4, SENE, E2SW, SE;	
Sec. 20: NE, NENW, S2NW, S2;	
Sec. 29: Lots 1-6, NWNE, NW, S2SE;	
Sec. 30: Lots 1-4, NE, E2NW, E2SW, N2SE, SWSE.	
2,096.90 Acres	
Sevier County, Utah	
Richfield Field Office	
Stipulations	Notices
	UT-LN-101: Air Quality
	UT-LN-102: Air Quality Analysis
	UT-LN-128: Floodplain Management
	UT-LN-156: Pollinators and Pollinator Habitat

UT0920 - 023	
T. 24 S., R. 2 W., SLM	
Sec. 21: Lots 1-3, 5-8, W2.	
613.02 Acres	
Sevier County, Utah	
Richfield Field Office	
Stipulations	Notices
UT-S-01: Air Quality	T&E 27: Yellow-Billed Cuckoo
	UT-LN-49: Utah Sensitive Species
	UT-LN-96: Air Quality Mitigation Measures
	UT-LN-99: Regional Ozone Formation Controls
	UT-LN-101: Air Quality
	UT-LN-102: Air Quality Analysis
	UT-LN-128: Floodplain Management
	UT-LN-156: Pollinators and Pollinator Habitat

UT0920 - 024 T. 24 S., R. 3 W., SLM Sec. 25: NE, E2NW, S2; Sec. 26: SESE; Sec. 35: E2NE, NESE, S2SE. 800.00 Acres Sevier County, Utah Richfield Field Office	
Stipulations	Notices
UT-S-01: Air Quality	T&E 27: Yellow-Billed Cuckoo
UT-S-78: NSO – Cemeteries, Culinary Water Sources, Landfill (Existing and Closed), Lands Managed under R&PP Act Leases, Sites Listed on the National Register of Historic Places, Incorporated Municipalities, Developed Recreation Sites, and BLM Administrative Sites.	UT-LN-49: Utah Sensitive Species
	UT-LN-56: Drinking Water Source Protection Zone
	UT-LN-58: Drinking Water Protection Zone
	UT-LN-91: Water and Watershed Protection
	UT-LN-96: Air Quality Mitigation Measures
	UT-LN-99: Regional Ozone Formation Controls
	UT-LN-101: Air Quality
	UT-LN-102: Air Quality Analysis
	UT-LN-128: Floodplain Management
	UT-LN-156: Pollinators and Pollinator Habitat

UT0920 - 026 T. 25 S., R. 3 W., SLM Sec. 11: Lots 1-4, N2, W2SW, SESW. 600.92 Acres Sevier County, Utah Richfield Field Office	
Stipulations	Notices
UT-S-01: Air Quality	T&E 27: Yellow-Billed Cuckoo
	UT-LN-49: Utah Sensitive Species
	UT-LN-51: Special Status Plants: Not Federally Listed
	UT-LN-96: Air Quality Mitigation Measures

UT0920 - 026 T. 25 S., R. 3 W., SLM Sec. 11: Lots 1-4, N2, W2SW, SESW. 600.92 Acres Sevier County, Utah Richfield Field Office	
Stipulations	Notices
	UT-LN-99: Regional Ozone Formation Controls
	UT-LN-101: Air Quality
	UT-LN-102: Air Quality Analysis
	UT-LN-128: Floodplain Management
	UT-LN-156: Pollinators and Pollinator Habitat

UT0920 - 029 T. 18 S., R. 2 E., SLM Sec. 5: Lot 4, SWNW, W2SW, SESW, W2SE, SESE; Sec. 6: Lots 1-5, S2NE, SENW. 641.03 Acres Sanpete County, Utah Richfield Field Office	
Stipulations	Notices
UT-S-01: Air Quality	T&E-09: Utah Prairie Dog
	UT-LN-49: Utah Sensitive Species
	UT-LN-72: High Potential Paleontological Resources
	UT-LN-96: Air Quality Mitigation Measures
	UT-LN-99: Regional Ozone Formation Controls
	UT-LN-101: Air Quality
	UT-LN-102: Air Quality Analysis
	UT-LN-128: Floodplain Management
	UT-LN-156: Pollinators and Pollinator Habitat

<p>UT0920 - 030 T. 22 S., R. 5 E., SLM Sec. 24: S2SW, S2SE; Sec. 25: W2, W2SE. 560.00 Acres Sevier County, Utah Richfield Field Office</p>	
Stipulations	Notices
UT-S-01: Air Quality	T&E-14: Last Chance Townsendia (<i>townsendia aprica</i>)
	T&E-17: Sand Rafael Cactus (<i>pediocactus despainii</i>)
	T&E 27: Yellow-Billed Cuckoo
	UT-LN-49: Utah Sensitive Species
	UT-LN-65 Old Spanish Trail
	UT-LN-96: Air Quality Mitigation Measures
	UT-LN-99: Regional Ozone Formation Controls
	UT-LN-102: Air Quality Analysis
	UT-LN-128: Floodplain Management
	UT-LN-156: Pollinators and Pollinator Habitat
<p>UT0920 - 031 T. 22 S., R. 6 E., SLM Sec. 18: SWSE; Sec. 19: W2NE, NWSE. 160.00 Acres Emery County, Utah Price Field Office</p>	
Stipulations	Notices
UT-S-01: Air Quality	T&E-03: Endangered Fish of the Upper Colorado River Drainage Basin
UT-S-97: NSO – Fragile Soils/Slopes Greater than 40 Percent	T&E-07: Southwestern Willow Flycatcher
UT-S-101: CSU – Fragile Soils/Slopes 20-40 Percent	T&E-14: Last Chance Townsendia (<i>townsendia aprica</i>)
UT-S-127: NSO – Intermittent and Perennial Streams	T&E-17: Sand Rafael Cactus (<i>pediocactus despainii</i>)
UT-S-232: TL – Mule Deer and Elk Crucial Winter Range	T&E 27: Yellow-Billed Cuckoo
UT-S-260: TL – Raptor Habitat	UT-LN-25: White-Tailed and Gunnison Prairie Dog

UT-S-285: TL – Migratory Bird Nesting	UT-LN-44: Raptors
UT-S-305: CSU – Noxious Weed	UT-LN-45: Migratory Bird
	UT-LN-49: Utah Sensitive Species
	UT-LN-51: Special Status Plants; Not Federally Listed
	UT-LN-52: Noxious Weeds
	UT-LN-60: Steep Slopes
	UT-LN-65 Old Spanish Trail
	UT-LN-61: Severe Soil Erosion & Steep Slopes
	UT-LN-96: Air Quality Mitigation Measures
	UT-LN-99: Regional Ozone Formation Controls
	UT-LN-102: Air Quality Analysis
	UT-LN-104: Burrowing Owl Habitat
	UT-LN-121: NSO – PL 97-98 - Prime Soils of Statewide Significance
	UT-LN-128: Floodplain Management
	UT-LN-156: Pollinators and Pollinator Habitat

<p>UT0920 - 033 T. 23 S., R. 6 E., SLM Sec. 8: E2; Sec. 9: All; Sec. 10: All. 1,600.00 Acres Emery County, Utah Price Field Office</p>	
Stipulations	Notices
UT-S-01: Air Quality	T&E-03: Endangered Fish of the Upper Colorado River Drainage Basin
UT-S-97: NSO – Fragile Soils/Slopes Greater than 40 Percent	T&E-06: Mexican Spotted Owl
UT-S-101: CSU – Fragile Soils/Slopes 20-40 Percent	T&E-07: Southwestern Willow Flycatcher
UT-S-127: NSO – Intermittent and Perennial Streams	T&E-14: Last Chance Townsendia (<i>townsendia aprica</i>)
UT-S-260: TL – Raptor Habitat	T&E-15: Wright Fishhook Cactus (<i>sclerocactus wrightiae</i>)
UT-S-285: TL – Migratory Bird Nesting	T&E-17: Sand Rafael Cactus (<i>pediocactus despainii</i>)
UT-S-305: CSU – Noxious Weed	T&E 27: Yellow-Billed Cuckoo

UT0920 - 033 T. 23 S., R. 6 E., SLM Sec. 8: E2; Sec. 9: All; Sec. 10: All. 1,600.00 Acres Emery County, Utah Price Field Office	
Stipulations	Notices
	UT-LN-25: White-Tailed and Gunnison Prairie Dog
	UT-LN-44: Raptors
	UT-LN-45: Migratory Bird
	UT-LN-49: Utah Sensitive Species
	UT-LN-51: Special Status Plants: Not Federally Listed
	UT-LN-52: Noxious Weeds
	UT-LN-60: Steep Slopes
	UT-LN-61: Severe Soil Erosion & Steep Slopes
	UT-LN-65 Old Spanish Trail
	UT-LN-96: Air Quality Mitigation Measures
	UT-LN-99: Regional Ozone Formation Controls
	UT-LN-102: Air Quality Analysis
	UT-LN-104: Burrowing Owl Habitat
	UT-LN-121: NSO – PL 97-98 - Prime Soils of Statewide Significance
	UT-LN-128: Floodplain Management
	UT-LN-149: Crucial Antelope Fawning Areas
	UT-LN-156: Pollinators and Pollinator Habitat

UT0920 - 035 T. 9 S., R. 17 E., SLM Sec. 33: All; Sec. 34: All. 1,280.00 Acres Duchesne County, Utah Vernal Field Office	
Stipulations	Notices
UT-S-01: Air Quality	T&E-03: Endangered Fish of the Upper Colorado River Drainage Basin

UT0920 - 035 T. 9 S., R. 17 E., SLM Sec. 33: All; Sec. 34: All. 1,280.00 Acres Duchesne County, Utah Vernal Field Office	
Stipulations	Notices
UT-S-96: NSO – Fragile Soils/Slopes Greater than 40%	UT-LN-13 Pronghorn fawning and winter habitat
UT-S-99: CSU – Fragile Soils/Slopes	UT-LN-25: White-Tailed and Gunnison Prairie Dog
UT-S-100: CSU – Fragile Soils/Slopes (21% - 40%)	UT-LN-44: Raptors
UT-S-157: NSO/CSU/TL – Visual Resources	UT-LN-49: Utah Sensitive Species
UT-S-261: TL – Raptor Buffers	UT-LN-52: Noxious Weeds
	UT-LN-83: Site Row
	UT-LN-96: Air Quality Mitigation Measures
	UT-LN-99: Regional Ozone Formation Controls
	UT-LN-102: Air Quality Analysis
	UT-LN-156: Pollinators and Pollinator Habitat

UT0920 - 050 T. 9 S., R. 18 E., SLM Sec. 33: N2NE, N2NW. 160.00 Acres Uintah County, Utah Vernal Field Office	
Stipulations	Notices
UT-S-96: NSO – Fragile Soils/Slopes Greater than 40%	T&E-03: Endangered Fish of the Upper Colorado River Drainage Basin
UT-S-99: CSU – Fragile Soils/Slopes	T&E-05: Listed Plant Species
UT-S-100: CSU – Fragile Soils/Slopes (21% - 40%)	T&E-12: Pariette Cactus (<i>sclerocactus brevispinus</i>) and Uintah Basin Hookless Cactus [<i>sclerocatus glaucus (brevispinus and wetlandicus)</i>]
UT-S-123: NSO – Riparian, Floodplains, and Public Water Reserves	UT-LN-13 Pronghorn fawning and winter habitat
UT-S-157: NSO/CSU/TL – Visual Resources	UT-LN-25: White-Tailed and Gunnison Prairie Dog
UT-S-261: TL – Raptor Buffers	UT-LN-44: Raptors

UT0920 - 050 T. 9 S., R. 18 E., SLM Sec. 33: N2NE, N2NW. 160.00 Acres Uintah County, Utah Vernal Field Office	
Stipulations	Notices
	UT-LN-49: Utah Sensitive Species
	UT-LN-52: Noxious Weeds
	UT-LN-83: Site Row
	UT-LN-96: Air Quality Mitigation Measures
	UT-LN-99: Regional Ozone Formation Controls
	UT-LN-102: Air Quality Analysis
	UT-LN-128: Floodplain Management
	UT-LN-156: Pollinators and Pollinator Habitat

Appendix B – Stipulations and Notices

Stipulation Summary Table

STANDARD STIPULATIONS (FROM H-3120 – COMPETITIVE LEASING HANDBOOK) *	
CULTURAL RESOURCE PROTECTION STIPULATION	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.
THREATENED AND ENDANGERED SPECIES ACT STIPULATION	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.

*These stipulations are attached to all leases issued.

NUMBER	UTAH STIPULATIONS
UT-S-01	AIR QUALITY All new and replacement internal combustion gas field engines of less than or equal to 300 design-rated horsepower shall not emit more than 2 grams of NO _x per horsepower-hour. Exception: This requirement does not apply to gas field engines of less than or equal to 40 design-rated horsepower. Modification: None Waiver: None AND 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 NO _x per horsepower-hour. Exception: None

NUMBER	UTAH STIPULATIONS
	<p>Modification: None Waiver: None</p>
<p>UT-S-78</p>	<p>NO SURFACE OCCUPANCY – CEMETERIES, CULINARY WATER SOURCES, LANDFILL (EXISTING AND CLOSED), LANDS MANAGED UNDER R&PP ACT LEASES, SITES LISTED ON THE NATIONAL REGISTER OF HISTORIC PLACES, INCORPORATED MUNICIPALITIES, DEVELOPED RECREATION SITES, AND BLM ADMINISTRATIVE SITES.</p> <p>No surface occupancy for oil and gas activities.</p> <p>Exception: None Modification: None Waiver: None</p>
<p>UT-S-96</p>	<p>NO SURFACE OCCUPANCY – FRAGILE SOILS/SLOPES GREATER THAN 40%</p> <p>No surface occupancy for slopes greater than 40 percent.</p> <p>Exception: If after an environment analysis the authorized officer determines that it would cause undue or unnecessary degradation to pursue other placement alternatives; surface occupancy in the NSO area may be authorized. Additionally a plan shall be submitted by the operator and approved by BLM prior to construction and maintenance and include:</p> <ul style="list-style-type: none"> • An erosion control strategy; • GIS modeling; • Proper survey and design by a certified engineer. <p>Modification: Modifications also may be granted if a more detailed analysis, i.e. Order I, soil survey conducted by a qualified soil scientist finds that surface disturbance activities could occur on slopes greater than 40% while adequately protecting the area from accelerated erosion.</p> <p>Waiver: None</p>
<p>UT-S-97</p>	<p>NO SURFACE OCCUPANCY – FRAGILE SOILS/SLOPES GREATER THAN 40 PERCENT</p> <p>No surface occupancy on slopes greater than 40 percent.</p>

NUMBER	UTAH STIPULATIONS
	<p>Exception: If after an environment analysis the authorized officer determines that it would cause undue or unnecessary degradation to pursue other placement alternatives; surface occupancy in the area may be authorized. In addition, a plan from the operator and BLM’s approval of the plan shall be required before construction and maintenance could begin. The plan would have to include:</p> <ul style="list-style-type: none"> • An erosion control strategy; • GIS modeling; • Proper survey and design by a certified engineer. <p>Modification: None Waiver: None</p>
<p>UT-S-99</p>	<p style="text-align: center;">CONTROLLED SURFACE USE – FRAGILE SOILS/SLOPES</p> <p>The surface operating standards for oil and gas exploration and development (Gold Book) shall be used as a guide for surface-disturbing proposals on steep slopes/hillsides.</p> <p>Exception: None Modification: None Waiver: None</p>
<p>UT-S-100</p>	<p style="text-align: center;">CONTROLLED SURFACE USE – FRAGILE SOILS/SLOPES (21%-40%)</p> <p>If surface-disturbing activities cannot be avoided on slopes from 21-40% a plan will be required. The plan will approved by BLM prior to construction and maintenance and include:</p> <ul style="list-style-type: none"> • An erosion control strategy; • GIS modeling; • Proper survey and design by a certified engineer. <p>Exception: None Modification: None Waiver: None</p>
<p>UT-S-101</p>	<p style="text-align: center;">CONTROLLED SURFACE USE – FRAGILE SOILS/SLOPES 20-40 PERCENT</p> <p>In surface disturbing proposals regarding construction on slopes of 20 percent to 40 percent, include an approved erosion control strategy and topsoil segregation/restoration plan. Such construction must be properly surveyed and designed by a certified engineer and approved by the BLM prior to project implementation, construction, or maintenance.</p>

NUMBER	UTAH STIPULATIONS
	<p>Exception: If after an environment analysis the authorized officer determines that it would cause undue or unnecessary degradation to pursue other placement alternatives; surface occupancy in the area may be authorized. In addition, a plan from the operator and BLM’s approval of the plan would be required before construction and maintenance could begin. The plan must include:</p> <ul style="list-style-type: none"> • An erosion control strategy; • GIS modeling; • Proper survey and design by a certified engineer. <p>Modification: Modifications also may be granted if a more detailed analysis is conducted and shows that impacts can be mitigated, e.g., Order I soil survey conducted by a qualified soil scientist, finds that surface disturbance activities could occur on slopes between 20 and 40 percent while adequately protecting areas from accelerated erosion.</p> <p>Waiver: None</p>
<p>UT-S-111</p>	<p style="text-align: center;">NO SURFACE OCCUPANCY – WETLAND/HYDRIC SOILS</p> <p>No surface occupancy on wetland soils or soils identified as having hydric soil properties.</p> <p>Exception: Consider exceptions to NSO if a site-specific environmental analysis determines that other placement alternatives would cause undue or unnecessary degradation to resources. In addition, require the operator to submit a plan prior to commencing operations that addresses:</p> <ul style="list-style-type: none"> • Erosion control strategies; • Mitigation to protect surface from rutting, compaction, and displacement, and disruption of surface and subsurface hydrologic function; • Mitigation or restoration measures to restore hydrologic function to site; • Proper survey and design by a certified engineer. <p>Modification: None</p> <p>Waiver: None</p>
<p>UT-S-121</p>	<p style="text-align: center;">NO SURFACE OCCUPANCY – RIPARIAN AND WETLAND AREAS</p> <p>No surface disturbance and/or occupancy within buffer zones around natural springs. Base the size of the buffer on hydrological, riparian, and other factors necessary to protect the water quality of the springs. If these factors cannot be determined, maintain a 330-foot buffer zone from outer edge.</p> <p>Exception: Consider exceptions if it can be shown that (1) there are no practical alternatives to the disturbance, (2) all long-term impacts can be fully mitigated, and (3) the activity will benefit and enhance the riparian area. Consider</p>

NUMBER	UTAH STIPULATIONS
	<p>compensatory mitigation where surface disturbance cannot be avoided within riparian wetland habitats on a site-specific basis. Modification: None Waiver: None</p>
<p>UT-S-123</p>	<p>NO SURFACE OCCUPANCY – RIPARIAN, FLOODPLAINS, AND PUBLIC WATER RESERVES No new surface-disturbing activities are allowed within active flood plains, wetlands, public water reserves, or 100 meters of riparian areas. Keep construction of new stream crossings to a minimum. Exception: An exception could be authorized if: (a) there are no practical alternatives (b) impacts could be fully mitigated, or (c) the action is designed to enhance the riparian resources. Modification: None Waiver: None</p>
<p>UT-S-127</p>	<p>NO SURFACE OCCUPANCY – INTERMITTENT AND PERENNIAL STREAMS No new surface disturbance (excluding fence lines) will be allowed in areas within the 100-year floodplain or 100 meters (330 feet) on either side from the centerline, whichever is greater, along all perennial and intermittent streams, streams with perennial reaches, and riparian areas. Exception: The authorized officer could authorize an exception if it could be shown that the project as mitigated eliminated the need for the restriction. An exception could be authorized if (a) there are no practical alternatives, (b) impacts could be fully mitigated, or (c) the action is designed to enhance the riparian resources. Modification: None Waiver: None</p>
<p>UT-S-157</p>	<p>NO SURFACE OCCUPANCY/CONTROLLED SURFACE USE/TIMING LIMITATION – VISUAL RESOURCES Visual resource management activities will comply with BLM Handbook 8410-1.</p>

NUMBER	UTAH STIPULATIONS
	<p>Within VRM Class I areas, very limited management activity will be allowed, with the objective of preserving the existing character of the landscape, allowing for natural ecological changes. The level of change to the landscape should be very low and shall not attract attention.</p> <p>Within VRM Class II areas, surface-disturbing activities will retain the existing character of the landscape. The level of change to the landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any change to the landscape shall repeat the basic elements of form, line, color and texture found in the predominant natural features of the characteristic landscape.</p> <p>Within VRM Class III areas, surface disturbing activities will partially retain the existing character of the landscape. The allowable level of change will be moderate, may attract attention, but should not dominate the view of the casual observer. Landscape changes should repeat the basic elements of form, line, color and texture found in the predominant natural features of the characteristic landscape.</p> <p>Within VRM Class IV areas, surface disturbing activities are allowed to dominate the view and the major focus of viewer attention. Major modifications to the existing character of the landscape are allowed. But every attempt should be made to minimize and mitigate the impacts.</p> <p>Exception: Exempted are recognized utility corridors.</p> <p>Modification: None</p> <p>Waiver: None</p>
<p>UT-S-232</p>	<p style="text-align: center;">TIMING LIMITATION – MULE DEER AND ELK CRUCIAL WINTER RANGE</p> <p>No surface disturbing or otherwise disruptive activities within mule deer and elk crucial winter range from December 1 to April 15.</p> <p>Exception: Upon review and monitoring, the authorized officer may grant exceptions because of climatic and/or range conditions if certain criteria are met and if activities would not cause undue stress to deer and/or elk populations or habitats.</p> <p>Modification: Season may be adjusted depending on climatic and range conditions.</p> <p>Waiver: A waiver may be granted if the winter range habitat is unsuitable for or unoccupied during winter months by deer/elk and there is no reasonable likelihood of future winter range use.</p>
<p>UT-S-234</p>	<p style="text-align: center;">TIMING LIMITATION – CRUCIAL DEER WINTER RANGE</p> <p>No surface-disturbing activities within crucial deer winter range from November 15 to April 15 to minimize stress and disturbance to deer during crucial winter months.</p>

NUMBER	UTAH STIPULATIONS
	<p>Exception: The authorized officer may grant an exception if, after an analysis, the authorized officer determines that the animals are not present in the project area or the activity can be completed so as to not adversely affect the animals. Routine operation and maintenance is allowed.</p> <p>Modification: The authorized officer may modify the boundaries of the stipulation area if a portion of the area is not being used as deer winter range.</p> <p>Waiver: May be granted if the deer winter range is determined to be unsuitable or unoccupied and there is no reasonable likelihood of future use of the deer winter range.</p>
<p>UT-S-260</p>	<p style="text-align: center;">TIMING LIMITATION – RAPTOR HABITAT</p> <p>Raptor nesting complexes and known raptor nest sites will be closed seasonally from February 1 to July 15 within ½ mile of occupied nests.</p> <p>Exception: The authorized officer may grant an exception if the raptor nest in question is deemed to be inactive by May 31 and if the proposed activity would not result in a permanent structure or facility that would cause the subject nest to become unsuitable for nesting in future years.</p> <p>Modification: Season may be adjusted depending on climatic and range conditions. Distance may be adjusted if natural features provide adequate visual screening.</p> <p>Waiver: This stipulation may be waived if, in cooperation with the UDWR, it is determined that the site has been permanently abandoned or unoccupied for a minimum of 3 years.</p>
<p>UT-S-261</p>	<p style="text-align: center;">TIMING LIMITATION – RAPTOR BUFFERS</p> <p>Raptor management will be guided by the use of "Best Management Practices for Raptors and Their Associated Habitats in Utah" (Utah BLM, 2006, Appendix A), utilizing seasonal and spatial buffers, as well as mitigation, to maintain and enhance raptor nesting and foraging habitat, while allowing other resource uses.</p> <p>Exception: None</p> <p>Modification: Criteria that would need to be met, prior to implementing modifications to the spatial and seasonal buffers in the “<i>Raptor BMPs</i>”, would include the following:</p> <ol style="list-style-type: none"> 1. Completion of a site-specific assessment by a wildlife biologist or other qualified individual. See example (Attachment 1 of the Raptor BMPs in Appendix A) 2. Written documentation by the BLM Field Office Wildlife Biologist, identifying the proposed modification and affirming that implementation of the proposed modification(s) would not affect nest success or the suitability of the site for future nesting. Modification of the “BMPs” would not be recommended if it is

NUMBER	UTAH STIPULATIONS
	<p>determined that adverse impacts to nesting raptors would occur or that the suitability of the site for future nesting would be compromised.</p> <p>3. Development of a monitoring and mitigation strategy by a BLM biologist, or other raptor biologist. Impacts of authorized activities would be documented to determine if the modifications were implemented as described in the environmental documentation or Conditions of Approval, and were adequate to protect the nest site. Should adverse impacts be identified during monitoring of an activity, BLM would follow an appropriate course of action, which may include cessation or modification of activities that would avoid, minimize or mitigate the impact, or, with the approval of UDWR and the USFWS, BLM could allow the activity to continue while requiring monitoring to determine the full impact of the activity on the affected raptor nest. A monitoring report would be completed and forwarded to UDWR for incorporation into the Natural Heritage Program (NHP) raptor database.</p> <p>Waiver: None</p>
<p>UT-S-263</p>	<p style="text-align: center;">TIMING LIMITATION – CRUCIAL RAPTOR NESTING AREA</p> <p>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.</p> <p>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.</p> <p>Modification: None</p> <p>Waiver: None</p>
<p>UT-S-275</p>	<p style="text-align: center;">CONTROLLED SURFACE USE/TIMING LIMITATION – BALD EAGLES</p> <p>Bald eagles would be protected as outlined in the Bald Eagle Protection Act of 1940 (16 U.S.C. 668-668d, 54 Stat. 250, as amended). Activities on BLM lands that contain nesting or winter roosting habitat for the bald eagle would be avoided or restricted, depending on the duration and timing of the activity. Bald eagles would be managed according to the Best Management Practices for Raptors and their Associated Habitats in Utah (BLM 2006c). These management requirements would include restrictions and avoidance measures, including required surveys prior to activity, possible monitoring during the activity, implementation of seasonal and spatial buffers during the breeding season (January 1 – August 31), and avoidance of disturbance in riparian areas unless impracticable. No future ground-disturbing activities would be authorized within a 1.0-mile radius of known bald eagle nest sites year-round. Deviations may be allowed only after appropriate levels of consultation and</p>

NUMBER	UTAH STIPULATIONS
	<p>coordination with the USFWS/UDWR. In addition, no permanent above-ground structures would be allowed within a 0.50-mile radius of a winter roost site if the structure would result in the habitat becoming unsuitable for future winter roosting by bald eagles.</p> <p>These requirements would help to mitigate the adverse impacts of human disturbance on bald eagles during breeding and roosting seasons.</p> <ol style="list-style-type: none"> 1. Surveys will be required prior to operations unless species occupancy and distribution information is complete and available. All surveys must be conducted by qualified individual(s), and be conducted according to protocol. 2. Lease activities will require monitoring throughout the duration of the project. To ensure desired results are being achieved, minimization measures would be evaluated. 3. Water production will be managed to ensure maintenance or enhancement of riparian habitat. 4. Temporary activities within 1.0 mile of nest sites will not occur during the breeding season of January 1 to August 31, unless the area has been surveyed according to protocol and determined to be unoccupied. 5. Temporary activities within 0.5 miles of winter roost areas, e.g., cottonwood galleries, will not occur during the winter roost season of November 1 to March 31, unless the area has been surveyed according to protocol and determined to be unoccupied. 6. No permanent infrastructure will be placed within 1.0 mile of nest sites. 7. No permanent infrastructure will be placed within 0.5 miles of winter roost areas. 8. Remove big game carrion within 100 feet of lease roadways occurring within Bald Eagle foraging range. 9. Avoid loss or disturbance to large cottonwood gallery riparian habitats. 10. Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in suitable habitat. Utilize direction drilling to avoid direct impacts to large cottonwood gallery riparian habitats. Ensure that such direction drilling does not intercept or degrade alluvial aquifers. 11. All areas of surface disturbance within riparian areas and/or adjacent uplands should be re-vegetated with native species. <p>Additional measures may also be employed to avoid or minimize effects to the species between the lease stage and lease development stage. These additional measures will be developed and implemented in coordination with the USFWS/UDWR to ensure continued compliance with the Bald Eagle Protection Act.</p>

NUMBER	UTAH STIPULATIONS
	<p>Exception: An exception may be granted by the authorized officer if authorization is obtained from USFWS/UDWR. The authorized officer may also grant an exception if an analysis indicates that the nature of the conduct of the actions, as proposed or conditioned, would not impair the habitat and physical requirements determined necessary for the survival of the Bald Eagles.</p> <p>Modification: The authorized officer may modify the boundaries of the stipulation area if an analysis indicates, and USFWS/UDWR determines that a portion of the area is not being used as Bald Eagle nesting or roosting territories or if additional nesting or roosting territories are identified.</p> <p>Waiver: May be granted if there is no reasonable likelihood of site occupancy over a minimum 10 year period.</p>
<p>UT-S-285</p>	<p style="text-align: center;">TIMING LIMITATION – MIGRATORY BIRD NESTING</p> <p>Migratory bird nesting areas will be closed seasonally from April 15 to August 1. Areas with migratory birds designated as BLM Special Status Species will have the highest priority.</p> <p>Exception: Upon review and monitoring, the authorized officer may grant exceptions because of climatic and/or habitat conditions if activities would not cause undue stress to migratory bird populations.</p> <p>Modification: Season may be adjusted depending on climatic and range conditions. Distance may be adjusted if natural features provide adequate visual screening.</p> <p>Waiver: None</p>
<p>UT-S-305</p>	<p style="text-align: center;">CONTROLLED SURFACE USE – NOXIOUS WEED</p> <p>Continue implementation of noxious weed and invasive species control actions in accordance with national guidance and local weed management plans, in cooperation with State, federal, affected counties, adjoining private land owners, and other partners or interests directly affected. Implement Standard Operating Procedures and Mitigation Measures for herbicide use as well as prevention measures for noxious and invasive plants identified in the Record of Decision Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States PEIS and associated documents.</p> <p>Exception: None</p> <p>Modification: None</p> <p>Waiver: None</p>

Notice Summary Table

NUMBER	UTAH LEASE NOTICES
UT-LN-13	<p style="text-align: center;">PRONGHORN WINTER HABITAT</p> <p>The lessee/operator is given notice that lands in this lease have been identified as containing crucial pronghorn winter habitat. Surface use or otherwise disruptive activity may be restricted for up to 60 days during pronghorn fawning season, as determined by BLM, including exploration, drilling and other development activities. Modifications may be required in the Surface Use Plan of Operations including seasonal timing restrictions to protect the species and its habitat.</p>
UT-LN-25	<p style="text-align: center;">WHITE-TAILED AND GUNNISON PRAIRIE DOG</p> <p>The lessee/operator is given notice that this lease parcel has been identified as containing white-tailed or Gunnison prairie dog habitat. Modifications to the Surface Use Plan of Operations may be required in order to protect white-tailed or Gunnison prairie dog from surface disturbing activities in accordance with the Endangered Species Act and 43 CFR 3101.1-2.</p>
UT-LN-44	<p style="text-align: center;">RAPTORS</p> <p>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.</p>

NUMBER	UTAH LEASE NOTICES
UT-LN-45	<p style="text-align: center;">MIGRATORY BIRD</p> <p>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.</p>
UT-LN-49	<p style="text-align: center;">UTAH SENSITIVE SPECIES</p> <p>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.</p>
UT-LN-51	<p style="text-align: center;">SPECIAL STATUS PLANTS: NOT FEDERALLY LISTED</p> <p>The lessee/operator is given notice that lands in this lease have been identified as containing special status plants, not federally listed, and their habitats. Modifications to the Surface Use Plan of Operations may be required in order to protect the special status plants 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.</p>
UT-LN-52	<p style="text-align: center;">NOXIOUS WEEDS</p> <p>The lessee/operator is given notice that lands in this lease have been identified as containing or is near areas containing noxious weeds. Best management practices to prevent or control noxious weeds may be required for operations on the lease.</p>
UT-LN-53	<p style="text-align: center;">RIPARIAN AREAS</p> <p>The lessee/operator is given notice that this lease has been identified as containing riparian areas. No surface use or otherwise disruptive activity allowed within 100 meters of riparian areas unless it can be shown that (1) there is no practicable alternative; (2) that all long-term impacts are fully mitigated; or (3) that the construction is an enhancement to the riparian areas. Modifications to the Surface Use Plan of Operations may be required in accordance with section 6 of the lease terms and 43CFR3101.1-2.</p>
UT-LN-56	<p style="text-align: center;">DRINKING WATER SOURCE PROTECTION ZONE</p>

NUMBER	UTAH LEASE NOTICES
	<p>This lease (or a portion thereof) is within a public Drinking Water Source Protection zone. Before application for a permit to drill (APD) submittal or any proposed surface-disturbing activity, the lessee/operator must contact the public water system manager to determine any zoning ordinances, best management or pollution prevention measures, or physical controls that may be required within the protection zones. Drinking Water Source Protection plans are developed by the public water systems under the requirements of R309-600. Drinking Water Source Protection for Ground-Water Sources. (Utah Administrative Code). There may also be county ordinances in place to protect the source protection zones, as required by Section 19-4-113 of the Utah Code.</p> <p>Incorporated cities and towns may also protect their drinking water sources using Section 10-8-15 of the Utah Code. This part of the Code gives cities and towns the extraterritorial authority to enact ordinances to protect a source of drinking water ... "For 15 miles above the point from which it is taken and for a distance of 300 feet on each side of such stream..." Class I cities (greater than 100,000 population) are granted authority to protect their entire watersheds.</p> <p>Some public water sources qualify for monitoring waivers which reduce their monitoring requirements for pesticides and volatile organic chemicals (VOCs). Exploration, drilling, and production activities within Source Protection zone 3 could jeopardize these waivers, thus requiring increased monitoring. Contact the public water system to determine what effect your activities may have on their monitoring waivers. Please be aware of other State rules to protect surface and ground water: the Utah Division of Water Quality Rules R317 Water Quality Rules; and Rules of the Utah Division of Oil, Gas and Mining, Utah Oil and Gas Conservation Rules R649.</p> <p>At the time of development, drilling operators will additionally conform to the operational regulations in Onshore Oil & Gas Order No. 2 (which requires the protection and isolation of all usable quality waters, $\leq 10,000$ mg/L Total Dissolved Solids), Onshore Oil and Gas Order No. 7 (which prescribes measures required for the handling of produced water to insure the protection of surface and ground water sources) and the Surface Operating Standards and Guidelines for Oil and Gas Development, The Gold Book, Fourth Edition-Revised 2007 (which provides information and requirements for conducting environmentally responsible oil and gas operations).</p> <p>Additional mitigation measures may be necessary to prevent adverse impacts from oil and gas exploration and development activities. Mitigation measures may include submitting an erosion control plan with best management practices (BMPs) that address rigorous interim reclamation which might include surface roughening, vegetative buffer strips, etc.; and sediment control through the use of sediment logs, silt fences, erosion control blankets, outlet/inlet protection of water control features such as culverts or diversion ditches, sediment traps, run on/run off pad design features. If project activities are close to sensitive areas or water sources a semi or closed-loop drilling system should be required.</p>

NUMBER	UTAH LEASE NOTICES
UT-LN-58	<p style="text-align: center;">DRINKING WATER PROTECTION ZONE</p> <p>The lessee/operator is given notice that this lease parcel overlaps a drinking water protection zone for public water sources in Utah. At the time of development, drilling operators will conform to the provisions of the operational regulations and Onshore Oil & Gas Order Number 2, which requires the protection and isolation of all useable quality waters.</p>
UT-LN-59	<p style="text-align: center;">ERODIBLE SOILS AND STEEP SLOPES</p> <p>The lessee/operator is given notice that the area is a municipal or non-municipal watershed and has steep slopes and erosive soils. New roads will be constructed to avoid soils that are highly erosive and / or in critical or severe erosion conditions. New roads will be constructed with water bars. Riprap may be required. Road grades in excess of 8 percent will normally not be allowed. In special circumstances, where a road grade of more than 10 percent is allowed, its maximum length will be 1,000 feet. Access grading along with exploration, drilling, construction, or other activities will be prohibited during wet or muddy conditions (usually during spring runoff and summer monsoon rains). Based on the result of the field survey, the authorized officer will determine appropriate buffers and timing limitations. Modifications to the Surface Use Plan of Operations may be required in accordance with section 6 of the lease terms and 43CFR3101.1-2.</p>
UT-LN-60	<p style="text-align: center;">STEEP SLOPES</p> <p>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.</p>
UT-LN-61	<p style="text-align: center;">SEVERE SOIL EROSION & STEEP SLOPES</p> <p>The lessee/operator is given notice that the lands in this lease have been identified as having critical to severe soil erosion conditions and slopes exceeding 40%. The authorized officer may prohibit surface disturbing activities during wet and muddy periods to minimize watershed damage. Modifications to the Surface Use Plan of Operations may also be required. This limitation does not apply to operation and maintenance of producing wells.</p>
UT-LN-65	<p style="text-align: center;">OLD SPANISH TRAIL</p> <p>The lessee/operator is given notice that lands in this lease are within two miles of the Old Spanish Trail National Historic Trail [Old Spanish Trail Recognition Act of 2002, (Old Spanish Trail PLO 107-325)]. Modifications to the Surface Use Plan of Operations may be required to protect the historic integrity of the Trail, its resources, its values – such as landscape view sheds, and outdoor recreational opportunities associated with the foregoing.</p>

NUMBER	UTAH LEASE NOTICES
UT-LN-72	<p style="text-align: center;">HIGH POTENTIAL PALEONTOLOGICAL RESOURCES</p> <p>The lessee/operator is given notice that lands in this lease have been identified as having high potential for paleontological resources. Surveys will be required and modifications to the Surface Use Plan of Operations may be required in order to protect paleontological resources from surface disturbing activities in accordance with Section 6 of the lease terms and 43 CFR 3101.1-2. In addition, monitoring may be required during surface disturbing activities.</p>
UT-LN-83	<p style="text-align: center;">SITE ROW</p> <p>The lessee/operator is given notice that lands in this lease have an existing site ROW present. Modifications to the Surface Use Plan of Operations may be required or other appropriate mitigation as deemed necessary by the BLM Authorized Officer in order to protect the valid existing rights.</p>
UT-LN-91	<p style="text-align: center;">WATER AND WATERSHED PROTECTION</p> <p>The lessee/operator is given notice that this lease may need modifications to the Surface Use Plan of Operations in order to prevent water pollution and protect municipal and non-municipal watershed areas. No surface use or otherwise disruptive activity allowed within 500 feet of a supply well in order to prevent water quality degradation in accordance with section 6 of the lease terms and 43CFR3101.1-2.</p>
UT-LN-96	<p style="text-align: center;">AIR QUALITY MITIGATION MEASURES</p> <p>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.</p> <ul style="list-style-type: none"> • 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.

NUMBER	UTAH LEASE NOTICES
	<ul style="list-style-type: none"> • 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. <p>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.</p>
<p>UT-LN-99</p>	<p style="text-align: center;">REGIONAL OZONE FORMATION CONTROLS</p> <p>To mitigate any potential impact oil and gas development emissions may have on regional ozone formation, the following Best Management Practices (BMPs) would be required for any development projects:</p> <ul style="list-style-type: none"> • Tier II or better drilling rig engines • Stationary internal combustion engine standard of 2g NOx/bhp-hr for engines <300HP and 1g NOx/bhp-hr for engines >300HP • Low bleed or no bleed pneumatic pump valves • Dehydrator VOC emission controls to +95% efficiency • Tank VOC emission controls to +95% efficiency
<p>UT-LN-101</p>	<p style="text-align: center;">AIR QUALITY</p> <p>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.</p>

NUMBER	UTAH LEASE NOTICES
UT-LN-102	<p style="text-align: center;">AIR QUALITY ANALYSIS</p> <p>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.</p>
UT-LN-104	<p style="text-align: center;">BURROWING OWL HABITAT</p> <p>The lessee/operator is given notice that lands in this lease have been identified as containing Burrowing Owl Habitat. Modification to the Surface Use Plan of Operations may be required in order to protect the Burrowing Owl 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.</p>
UT-LN-107	<p style="text-align: center;">BALD EAGLE</p> <p>The Lessee/Operator is given notice that the lands in this parcel contains nesting/winter roost habitat for the bald eagle. The bald eagle was de-listed in 2007; however, it is still afforded protection under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c, 1940). Therefore, avoidance or use restrictions may be placed on 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 <u>temporary</u> action is completed prior to the following breeding or roosting season leaving no permanent structures and resulting in no permanent habitat loss. A <u>permanent</u> 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. The following avoidance and minimization measures have been designed to ensure activities carried out on the lease will not lead to the need to consider listing the eagle as threatened or endangered. Integration of, and adherence to the following measures will facilitate review and analysis of any submitted permits under the authority of this lease.</p> <p>Current avoidance and minimization measures include the following:</p> <ol style="list-style-type: none"> 1. Surveys will be required prior to operations unless species occupancy and distribution information is complete and available. All Surveys must be conducted by qualified individual(s), and be conducted according to protocol. 2. Lease activities will require monitoring throughout the duration of the project. To ensure desired results are being achieved, minimization measures will be evaluated. 3. Water production will be managed to ensure maintenance or enhancement of riparian habitat.

NUMBER	UTAH LEASE NOTICES
	<ol style="list-style-type: none"> 4. Temporary activities within 1.0 mile of nest sites will not occur during the breeding season of January 1 to August 31, unless the area has been surveyed according to protocol and determined to be unoccupied. 5. Temporary activities within 0.5 miles of winter roost areas, e.g., cottonwood galleries, will not occur during the winter roost season of November 1 to March 31, unless the area has been surveyed according to protocol and determined to be unoccupied. 6. No permanent infrastructure will be placed within 1.0 mile of nest sites. 7. No permanent infrastructure will be placed within 0.5 miles of winter roost areas. 8. Remove big game carrion from within 100 feet of lease roadways occurring within bald eagle foraging range. 9. Avoid loss or disturbance to large cottonwood gallery riparian habitats. 10. Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in suitable habitat Utilize directional drilling to avoid direct impacts to large cottonwood gallery riparian habitats. Ensure that such directional drilling does not intercept or degrade alluvial aquifers. 11. All areas of surface disturbance within riparian areas and/or adjacent uplands should be re-vegetated with native species. <p>Additional measures may also be employed to avoid or minimize effects to the species between the lease sale stage and lease development stage. These additional measures will be developed and implemented in coordination with the U.S. Fish and Wildlife Service.</p>
UT-LN-121	<p style="text-align: center;">NSO – PL 97-98 - PRIME SOILS OF STATEWIDE SIGNIFICANCE</p> <p>These soil units are to be avoided, no surface occupancy until cleared by United States Department of Agriculture, Natural Resources Conservation Service (NRCS), as described in Public Law 97-98.</p>
UT-LN-128	<p style="text-align: center;">FLOODPLAIN MANAGEMENT</p> <p>The lessee/operator is given notice that, in accordance with Executive Order 11988, to avoid adverse impact to floodplains 1) facilities should be located outside the 100 year floodplain, or 2) would be minimized or mitigated by modification of surface use plans within floodplains present within the lease.</p>
UT-LN-149	<p style="text-align: center;">CRUCIAL ANTELOPE FAWNING AREAS</p> <p>The Lessee/Operator is given notice that in order to protect crucial antelope fawning areas, exploration, drilling, and other development activity may be restricted from April 15 to July 1. This limitation does not apply to maintenance and operation of producing wells.</p>

NUMBER	UTAH LEASE NOTICES
<p>UT-LN-156</p>	<p style="text-align: center;">POLLINATORS AND POLLINATOR HABITAT</p> <p>In order to protect pollinators and pollinator habitat, in accordance with BLM policy outlined in Instruction Memorandum No. 2016-013, Managing for Pollinators on Public Lands, and Pollinator-Friendly Best Management Practices for Federal Lands (2015), the following avoidance, minimization, and mitigation measures would apply to this parcel:</p> <ol style="list-style-type: none"> 1. Give a preference for placing well pads in previously disturbed areas, dry areas that do not support forbs, or areas dominated by nonnative grasses. 2. Utilize existing well pads where feasible. 3. Avoid disturbance to native milkweed patches within Monarch migration routes to protect Monarch butterfly habitat. 4. Avoid disturbance of riparian and meadow sites, as well as small depressed areas that may function as water catchments and host nectar-producing species, to protect Monarch butterfly habitat and nectaring sites. 5. Minimize the use of pesticides that negatively impact pollinators. 6. During revegetation treatments: <ol style="list-style-type: none"> a. Use minimum till drills where feasible. b. Include pollinator-friendly site-appropriate native plant seeds or seedlings in seed mixes. c. Where possible, increase the cover and diversity of essential habitat components for native pollinators by: <ul style="list-style-type: none"> ▪ Using site-appropriate milkweed seeds or seedlings within Monarch migration routes through priority sage-grouse habitat. ▪ Using seed mixes with annual and short-lived perennial native forbs that will bloom the first year and provide forage for pollinators. ▪ Using seed mixes with a variety of native forb species to ensure different colored and shaped flowers to provide nectar and pollen throughout the growing season for a variety of pollinators. ▪ Seeding forbs in separate rows from grasses to avoid competition during establishment. ▪ Avoiding seeding non-native forbs and grasses that establish early and out compete slower-growing natives.

Threatened and Endangered Species Notices

NUMBER	THREATENED & ENDANGERED SPECIES NOTICES
<p>T&E-03</p>	<p style="text-align: center;">ENDANGERED FISH OF THE UPPER COLORADO RIVER DRAINAGE BASIN</p> <p>The Lessee/Operator is given notice that the lands in this parcel contain Critical Habitat for the Colorado River fish (bonytail, humpback chub, Colorado pike minnow, and razorback sucker) listed as endangered under the Endangered Species Act, or these parcels have watersheds that are tributary to designated habitat. Critical habitat was designated for the four endangered Colorado River fishes on March 21, 1994(59 FR 13374-13400). Designated critical habitat for all the endangered fishes includes those portions of the 100-year floodplain that contain primary constituent elements necessary for survival of the species. Avoidance or use restrictions may be placed on portions of the lease. The following avoidance and minimization measures have been designed to ensure activities carried out on the lease are in compliance with the Endangered Species Act. Integration of and adherence to these measures will facilitate review and analysis of any submitted permits under the authority of this lease. Following these measures could reduce the scope of Endangered Species Act, Section 7 consultation at the permit stage. Current avoidance and minimization measures include the following:</p> <ol style="list-style-type: none"> 1. Surveys will be required prior to operations unless species occupancy and distribution information is complete and available. All surveys must be conducted by qualified individual(s). 2. Lease activities will require monitoring throughout the duration of the project. To ensure desired results are being achieved, minimization measures will be evaluated and, if necessary, Section 7 consultation reinitiated. 3. Water production will be managed to ensure maintenance or enhancement of riparian habitat. 4. Avoid loss or disturbance of riparian habitats. 5. Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in suitable riparian habitat. Ensure that such directional drilling does not intercept or degrade alluvial aquifers. 6. Conduct watershed analysis for leases in designated critical habitat and overlapping major tributaries in order to determine toxicity risk from permanent facilities. 7. Implement Appendix B (Hydrologic Considerations for Pipeline Crossing Stream Channels, Technical Note 423). 8. Drilling will not occur within 100 year floodplains of rivers or tributaries to rivers that contain listed fish species or critical habitat. 9. In areas adjacent to 100-year flood plains, particularly in systems prone to flash floods, analyze the risk for flash floods to impact facilities, and use closed loop drilling, and pipeline burial or suspension according to Appendix B

NUMBER	THREATENED & ENDANGERED SPECIES NOTICES
	<p>(Hydrologic Considerations for Pipeline Crossing Stream Channels, Technical Note 423, to minimize the potential for equipment damage and resulting leaks or spills.</p> <p>Water depletions from <i>any</i> portion of the Upper Colorado River drainage basin above Lake Powell are considered to adversely affect or adversely modify the critical habitat of the four resident endangered fish species, and must be evaluated with regard to the criteria described in the Upper Colorado River Endangered Fish Recovery Program. Formal consultation with USFWS is required for all depletions. All depletion amounts must be reported to BLM.</p> <p>Additional measures to avoid or minimize effects to the species may be developed and implemented in consultation with the U.S. Fish and Wildlife Service between the lease sale stage and lease development stage to ensure continued compliance with the ESA.</p>
T&E-05	<p style="text-align: center;">LISTED PLANT SPECIES</p> <p>The Lessee/Operator is given notice that the lands in this parcel contain suitable habitat for federally listed plant species under the Endangered Species Act. The following avoidance and minimization measures have been developed to facilitate review and analysis of any submitted permits under the authority of this lease</p> <ol style="list-style-type: none"> 1. Site inventories: <ol style="list-style-type: none"> a. Must be conducted to determine habitat suitability, b. Are required in known or potential habitat for all areas proposed for surface disturbance prior to initiation of project activities, at a time when the plant can be detected, and during appropriate flowering periods, c. Documentation should include, but not be limited to individual plant locations and suitable habitat distributions, and d. All surveys must be conducted by qualified individuals. 2. Lease activities will require monitoring throughout the duration of the project. To ensure desired results are being achieved, minimization measures will be evaluated and, if necessary, Section 7 consultation reinitiated. 3. Project activities must be designed to avoid direct disturbance to populations and to individual plants: <ol style="list-style-type: none"> a. Designs will avoid concentrating water flows or sediments into plant occupied habitat. b. Construction will occur down slope of plants and populations where feasible; if well pads and roads must be sited upslope, buffers of 300 feet minimum between surface disturbances and plants and populations will be incorporated. c. Where populations occur within 300 ft. of well pads, establish a buffer or fence the individuals or groups of individuals during and post-construction. d. Areas for avoidance will be visually identifiable in the field, e.g., flagging, temporary fencing, rebar, etc.

NUMBER	THREATENED & ENDANGERED SPECIES NOTICES
	<p>e. For surface pipelines, use a 10 foot buffer from any plant locations: f. If on a slope, use stabilizing construction techniques to ensure the pipelines don't move towards the population.</p> <ol style="list-style-type: none"> 4. For riparian/wetland-associated species, e.g. Ute ladies-tresses, avoid loss or disturbance of riparian habitats. 5. Ensure that water extraction or disposal practices do not result in change of hydrologic regime. 6. Limit disturbances to and within suitable habitat by staying on designated routes. 7. Limit new access routes created by the project. 8. Place signing to limit ATV travel in sensitive areas. 9. Implement dust abatement practices near occupied plant habitat. 10. All disturbed areas will be re-vegetated with native species comprised of species indigenous to the area. 11. Post construction monitoring for invasive species will be required. 12. Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in plant habitat. Ensure that such directional drilling does not intercept or degrade alluvial aquifers. 13. Lease activities will require monitoring throughout the duration of the project. To ensure desired results are being achieved, minimization measures will be evaluated and, if necessary, Section 7 consultation reinitiated. <p>Additional measures to avoid or minimize effects to the species may be developed and implemented in consultation with the U.S. Fish and Wildlife Service between the lease sale stage and lease development stage to ensure continued compliance with the Endangered Species Act.</p>
<p>T&E-06</p>	<p style="text-align: center;">MEXICAN SPOTTED OWL</p> <p>The Lessee/Operator is given notice that the lands in this parcel contain suitable habitat for Mexican spotted owl, a federally listed species. The Lessee/Operator is given notice that the lands in this lease contain Designated Critical Habitat for the Mexican spotted owl, a federally listed species. Critical habitat was designated for the Mexican spotted owl on August 31, 2004 (69 FR 53181-53298). Avoidance or use restrictions may be placed on portions of the lease. Application of appropriate measures will depend whether the action is temporary or permanent, and whether it occurs within or outside the owl nesting season.</p> <p>A <u>temporary</u> action is completed prior to the following breeding season leaving no permanent structures and resulting in no permanent habitat loss. A <u>permanent</u> action continues for more than one breeding season and/or causes a loss of owl habitat or displaces owls through disturbances, i.e. creation of a permanent structure.</p>

NUMBER	THREATENED & ENDANGERED SPECIES NOTICES
	<p>The following avoidance and minimization measures have been designed to ensure activities carried out on the lease are in compliance with the Endangered Species Act. Integration of, and adherence to these measures, will facilitate review and analysis of any submitted permits under the authority of this lease. Following these measures could reduce the scope of Endangered Species Act, Section 7 consultation at the permit stage. Current avoidance and minimization measures include the following:</p> <ol style="list-style-type: none"> 1. Surveys will be required prior to operations unless species occupancy and distribution information is complete and available. All Surveys must be conducted by qualified individual(s). 2. Assess habitat suitability for both nesting and foraging using accepted habitat models in conjunction with field reviews. Apply the conservation measures below if project activities occur within 0.5 mile of suitable owl habitat. Determine potential effects of actions to owls and their habitat. <ol style="list-style-type: none"> a. Document type of activity, acreage and location of direct habitat impacts, type and extent of indirect impacts relative to location of suitable owl habitat. b. Document if action is temporary or permanent. 3. Lease activities will require monitoring throughout the duration of the project. To ensure desired results are being achieved, minimization measures will be evaluated and, if necessary, Section 7 consultation reinitiated. 4. Water production will be managed to ensure maintenance or enhancement of riparian habitat. 5. Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in canyon habitat suitable for Mexican spotted owl nesting. 6. For all temporary actions that may impact owls or suitable habitat: <ol style="list-style-type: none"> a. If the action occurs entirely outside of the owl breeding season (March 1 – August 31), and leaves no permanent structure or permanent habitat disturbance, action can proceed without an occupancy survey. b. If action will occur during a breeding season, survey for owls prior to commencing activity. If owls are found, activity must be delayed until outside of the breeding season. c. Rehabilitate access routes created by the project through such means as raking out scars, re-vegetation, gating access points, etc. 7. For all permanent actions that may impact owls or suitable habitat: <ol style="list-style-type: none"> a. Survey two consecutive years for owls according to accepted protocol prior to commencing activities. b. If owls are found, no actions will occur within 0.5 mile of identified nest site. If nest site is unknown, no activity will occur within the designated Protected Activity Center (PAC). c. Avoid drilling and permanent structures within 0.5 mi of suitable habitat unless surveyed and not occupied.

NUMBER	THREATENED & ENDANGERED SPECIES NOTICES
	<p>d. Reduce noise emissions (e.g., use hospital-grade mufflers) to 45 dBA at 0.5 mile from suitable habitat, including canyon rims. Placement of permanent noise-generating facilities should be determined by a noise analysis to ensure noise does not encroach upon a 0.5 mile buffer for suitable habitat, including canyon rims.</p> <p>e. Limit disturbances to and within suitable habitat by staying on approved routes.</p> <p>f. Limit new access routes created by the project.</p> <p>Additional measures to avoid or minimize effects to the species may be developed and implemented in consultation with the U.S. Fish and Wildlife Service between the lease sale stage and lease development stage to ensure continued compliance with the Endangered Species Act.</p>
T&E-07	<p style="text-align: center;">SOUTHWESTERN WILLOW FLYCATCHER</p> <p>The Lessee/Operator is given notice that the lands in this parcel contains riparian habitat that falls within the range for southwestern willow flycatcher (<i>Empidonax traillii extimus</i>), a federally listed species. Avoidance or use restrictions may be placed on portions of the lease. Application of appropriate measures will depend whether the action is temporary or permanent, and whether it occurs within or outside the nesting season. A <u>temporary</u> action is completed prior to the following breeding season leaving no permanent structures and resulting in no permanent habitat loss. A <u>permanent</u> action continues for more than one breeding season and/or causes a loss of habitat or displaces flycatchers through disturbances, i.e. creation of a permanent structure. The following avoidance and minimization measures have been designed to ensure activities carried out on the lease are in compliance with the Endangered Species Act. Integration of, and adherence to these measures, will facilitate review and analysis of any submitted permits under the authority of this lease. Following these measures could reduce the scope of Endangered Species Act, Section 7 consultation at the permit stage. Current avoidance and minimization measures include the following:</p> <ol style="list-style-type: none"> 1. Surveys will be required prior to operations unless species occupancy and distribution information is complete and available. All Surveys must be conducted by qualified individual(s), and be conducted according to protocol. 2. Lease activities will require monitoring throughout the duration of the project. To ensure desired results are being achieved, minimization measures will be evaluated and, if necessary, Section 7 consultation reinitiated. 3. Water production will be managed to ensure maintenance or enhancement of riparian habitat. 4. Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in suitable riparian habitat. Ensure that such directional drilling does not intercept or degrade alluvial aquifers. 5. Drilling activities will maintain a 300 ft. buffer from suitable riparian habitat year long. 6. Drilling activities within 0.25 mile of occupied breeding habitat will not occur during the breeding season of May 1 to August 15.

NUMBER	THREATENED & ENDANGERED SPECIES NOTICES
	<p>7. Ensure that water extraction or disposal practices do not result in change of hydrologic regime that would result in loss or degradation of riparian habitat.</p> <p>8. Re-vegetate with native species all areas of surface disturbance within riparian areas and/or adjacent uplands.</p> <p>Additional measures to avoid or minimize effects to the species may be developed and implemented in consultation with the U.S. Fish and Wildlife Service between the lease sale stage and lease development stage to ensure continued compliance with the ESA.</p>
<p>T&E-09</p>	<p style="text-align: center;">UTAH PRAIRIE DOG</p> <p>The lessee/operator is given notice that lands in this lease may contain historic and/or occupied Utah prairie dog habitat, a threatened species under the Endangered Species Act. Avoidance or use restrictions may be placed on portions of the lease. Application of appropriate measures will depend whether the action is temporary or permanent, and whether it occurs when prairie dogs are active or hibernating. A <u>temporary</u> action is completed prior to the following active season leaving no permanent structures and resulting in no permanent habitat loss. A <u>permanent</u> action continues for more than one activity/hibernation season and/or causes a loss of Utah prairie dog habitat or displaces prairie dogs through disturbances, i.e. creation of a permanent structure. The following avoidance and minimization measures have been designed to ensure activities carried out on the lease are in compliance with the Endangered Species Act. Integration of, and adherence to these measures will facilitate review and analysis of any submitted permits under the authority of this lease. Following these measures could reduce the scope of Endangered Species Act, Section 7 consultation at the permit stage. Current avoidance and minimization measures include the following:</p> <ol style="list-style-type: none"> 1. Surveys will be required prior to operations unless species occupancy and distribution information is complete and available. All Surveys must be conducted by qualified individual(s). 2. Lease activities will require monitoring throughout the duration of the project. To ensure desired results are being achieved, minimization measures will be evaluated and, if necessary, Section 7 consultation reinitiated. 3. Where technically and economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in prairie dog habitat. 4. Surface occupancy or other surface disturbing activity will be avoided within 0.5 mile of active prairie dog colonies. 5. Permanent surface disturbance or facilities will be avoided within 0.5 mile of potentially suitable, unoccupied prairie dog habitat, identified and mapped by Utah Division of Wildlife Resources since 1976. 6. The lessee/operator should consider if fencing infrastructure on well pad, e.g., drill pads, tank batteries, and compressors, would be needed to protect equipment from burrowing activities. In addition, the operator should

NUMBER	THREATENED & ENDANGERED SPECIES NOTICES
	<p>consider if future surface disturbing activities would be required at the site.</p> <ol style="list-style-type: none"> 7. Within occupied habitat, set a 25 mph speed limit on operator-created and maintained roads. 8. Limit disturbances to and within suitable habitat by staying on designated routes. 9. Limit new access routes created by the project. <p>Additional measures to avoid or minimize effects to the species may be developed and implemented in consultation with the U.S. Fish and Wildlife Service between the lease sale stage and lease development stage to ensure continued compliance with the ESA.</p>
T&E-12	<p style="text-align: center;">PARIETTE CACTUS (SCLEROCACTUS BREVISPINUS) AND UINTA BASIN HOOKLESS CACTUS [SCLEROCACTUS GLAUCUS (BREVISPINUS AND WETLANDICUS)]</p> <p>The Lessee/Operator is given notice that the lands in this parcel contain suitable habitat for the Pariette cactus and Uinta Basin hookless cactus, under the Endangered Species Act (ESA). The following avoidance and minimization measures have been developed to facilitate review and analysis of any submitted permits under the authority of this lease.</p> <p>In order to minimize effects to the federally threatened Pariette cactus and Uinta Basin hookless cactus, the BLM in coordination with the USFWS, developed the following avoidance and minimization measures. Integration of and adherence to these measures will help ensure the activities carried out during oil and gas development (including but not limited to drilling, production, and maintenance) are in compliance with the ESA. For the purposes of this document, the following terms are so defined: Potential habitat is defined as areas which satisfy the broad criteria of the species habitat description; usually determined by preliminary, in-house assessment. Suitable habitat is defined as areas which contain or exhibit the specific components or constituents necessary for plant persistence; determined by field inspection and/or surveys; may or may not contain Uinta Basin hookless cactus. Habitat descriptions can be found in the U.S. Fish and Wildlife Service’s 1990 Recovery Plan and Federal Register Notices for the Uinta Basin hookless cactus (http://www.fws.gov/endangered/wildlife.html). Occupied habitat is defined as areas currently or historically known to support Uinta Basin hookless cactus; synonymous with “known habitat.” The following avoidance and minimization measures should be included in the Plan of Development:</p> <ol style="list-style-type: none"> 1. Pre-project habitat assessments will be completed across 100% of the project disturbance area within potential habitat prior to any ground disturbing activities to determine if suitable Pariette cactus and Uinta Basin hookless cactus habitat is present. 2. Within suitable habitat, site inventories will be conducted to determine occupancy. Inventories: <ol style="list-style-type: none"> a. Must be conducted by qualified individual(s) and according to BLM and Service accepted survey protocols,

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	<ul style="list-style-type: none"> b. Will be conducted in suitable and occupied habitat for all areas proposed for surface disturbance prior to initiation of project activities and within the same growing season, at a time when the plant can be detected, and during appropriate flowering periods: <ul style="list-style-type: none"> i. <i>Sclerocactus brevispinus</i> surveys should be conducted March 15th to June 30th, unless extended by the BLM ii. <i>Sclerocactus wetlandicus</i> surveys can be done any time of the year, provided there is no snow cover, c. Will occur within 300' from the edge of the proposed right-of-way for surface pipelines or roads; and within 300' from the perimeter of disturbance for the proposed well pad including the well pad, d. Will include, but not be limited to, plant species lists and habitat characteristics, and e. Will be valid until March 15th the following year for <i>Sclerocactus brevispinus</i> and one year from the survey date for <i>Sclerocactus wetlandicus</i>. <p>3. Design project infrastructure to minimize impacts within suitable habitat²:</p> <ul style="list-style-type: none"> a. Reduce well pad size to the minimum needed, without compromising safety, b. Limit new access routes created by the project, c. Roads and utilities should share common rights-of-way where possible, d. Reduce width of rights-of-way and minimize the depth of excavation needed for the road bed; where feasible, use the natural ground surface for the road within habitat, e. Place signing to limit off-road travel in sensitive areas, f. Stay on designated routes and other cleared/approved areas, and g. All disturbed areas will be re-vegetated with native species comprised of species indigenous to the area and non-native species that are not likely to invade other areas. <p>4. Within occupied habitat³, project infrastructure will be designed to avoid direct disturbance and minimize indirect impacts to populations and to individual plants:</p> <ul style="list-style-type: none"> a. Follow the above (3.) recommendations for project design within suitable habitats, b. Buffers of 300 feet minimum between the edge of the right of way (roads and surface pipelines) or surface disturbance (well pads) and plants and populations will be incorporated, c. Surface pipelines will be laid such that a 300 foot buffer exists between the edge of the right of way and the plants, use stabilizing and anchoring techniques when the pipeline crosses the habitat to ensure the pipelines don't move towards the population, d. Before and during construction, areas for avoidance should be visually identifiable in the field (e.g., flagging, temporary fencing, rebar, etc.),

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	<p>e. Where technically and economically feasible, use directional drilling or multiple wells from the same pad,</p> <p>f. Designs will avoid concentrating water flows or sediments into occupied habitat,</p> <p>g. Place produced oil, water, or condensate tanks in centralized locations, away from occupied habitat, and</p> <p>h. Minimize the disturbed area of producing well locations through interim and final reclamation. Reclaim well pads following drilling to the smallest area possible.</p> <p>5. Occupied Pariette cactus and Uinta Basin hookless cactus habitats within 300’ of the edge of the surface pipelines’ rights-of-way, 300’ of the edge of the roads’ rights-of-way, and 100’ from the edge of the well pad shall be monitored for a period of three years after ground disturbing activities. Monitoring will include annual plant surveys to determine plant and habitat impacts relative to project facilities. Annual reports shall be provided to the BLM and the USFWS. To ensure desired results are being achieved, minimization measures will be evaluated and may be changed after a thorough review of the monitoring results and annual reports during annual meetings between the BLM and the USFWS.</p> <p>6. Re-initiation of Section 7 consultation with the USFWS will be sought immediately if any loss of plants or occupied habitat for the Pariette cactus and Uinta Basin hookless cactus is anticipated as a result of project activities.</p> <p>7. The lessee will observe the management and conservation measures developed for the Level 1 and 2 Core Conservation Areas that have been identified by the USFWS. These conservation measures include disturbance caps (no further disturbance in Core 1 Areas and a 5% disturbance cap in Core 2 Areas).</p> <p>Additional site-specific measures may also be employed to avoid or minimize effects to the species. These additional measures will be developed and implemented in consultation with the USFWS to ensure continued compliance with the ESA.</p>
T&E-14	<p style="text-align: center;">LAST CHANCE TOWNSENDIA (<i>TOWNSENDIA APRICA</i>)</p> <p>In order to minimize effects to the federally threatened Last Chance Townsendia, the Bureau of Land Management (BLM), in coordination with the U.S. Fish and Wildlife Service (Service), has developed the following avoidance and minimization measures. Implementation of these measures will help ensure the activities carried out during oil and gas development (including but not limited to drilling, production, and maintenance operations) are in compliance with the endangered Species Act (ESA). For the purposes of this document, the following terms are so defined: <i>Potential habitat</i> is defined as areas which satisfy the broad criteria of the species habitat description; usually determined by preliminary, in-house assessment. <i>Suitable habitat</i> is defined as areas which contain or exhibit the specific components or constituents necessary for plant persistence; determined by field inspection and/or surveys; may or may not contain Last Chance</p>

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	<p>Townsendia; habitat descriptions can be found in Federal Register Notice and species recovery plan links at <http://www.fws.gov/endangered/wildlife.html>. <i>Occupied habitat</i> is defined as areas currently or historically known to support Last Chance Townsendia; synonymous with “known habitat.” The following avoidance and minimization measures should be included in the Plan of Development:</p> <ol style="list-style-type: none"> 1. Pre-project habitat assessments will be completed across 100% of the project disturbance area within potential habitat¹ prior to any ground disturbing activities (including ATV use) to determine if suitable Last Chance Townsendia habitat is present. 2. Site inventories will be conducted within suitable habitat to determine occupancy. Where standard surveys are technically infeasible and otherwise hazardous due to topography, slope, etc., suitable habitat will be assessed and mapped for avoidance (hereafter, “avoidance areas”); in such cases, in general, 300’ buffers will be maintained between surface disturbance and avoidance areas. However, site-specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat. Where conditions allow, inventories: <ol style="list-style-type: none"> a. Must be conducted by qualified individuals(s) and according to BLM and Service accept survey protocols, b. Will be conducted in suitable and occupied habitat for all areas proposed for surface disturbance prior to initiation of project activities and within the same growing season, at a time when the plant can be detected (usually April 15th to June 5th, however, surveyors should verify that the plant is flowering by contacting a BLM or FWS botanist or demonstrating that the nearest known population is in flower), c. Will occur within 300’ from the centerline of the proposed right-of-way for surface pipelines or roads; and within 300’ from the perimeter of disturbance for the proposed well pad including the well pad, d. Will include, but not be limited to, plant species lists and habitat characteristics, and e. Will be valid until April 15th the following year. 3. Design project infrastructure to minimize impacts within suitable habitat: <ol style="list-style-type: none"> a. Where standard surveys are technically infeasible, infrastructure and activities will avoid all suitable habitat (voidance areas) and incorporate 300’ buffers, in general; however, site-specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat, b. Reduce well pad size to the minimum needed, without compromising safety, c. Where technically and economically feasible, use directional drilling or multiple wells from the same pad, d. Limit new access routes created by the project, e. Roads and utilities should share common rights-of-way where possible, f. Reduce the width of rights-of-way and minimize the depth of excavation needed for the road bed; where feasible, use the natural ground surface for the road within habitat,

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	<ul style="list-style-type: none"> g. Place signing to limit off-road travel in sensitive areas, and h. Stay on designated routes and other cleared/approved areas, i. All disturbed areas will be re-vegetated with native species comprised of species indigenous to the area and non-native species that are not likely to invade other areas. <p>4. Within occupied habitat, project infrastructure will be designed to avoid direct disturbance and minimize indirect impacts to populations and to individual plants:</p> <ul style="list-style-type: none"> a. Follow the above recommendations (3.) for project design within suitable habitats, b. To avoid water flow and/or sedimentation into occupied habitat and avoidance areas, silt fences, hay bales, and similar structures or practices will be incorporated into the project design; appropriate placement of fill is encouraged, c. Construction of roads will occur such that the edge of the right of way is at least 300' from any plant and 300' from avoidance areas, d. Roads will be graveled with occupied habitat; the operator is encouraged to apply water for dust abatement to such areas from April 15th to June 5th (flowering period); dust abatement applications will be comprised of water only, e. The edge of the well pad should be located at least 300' away from plants and avoidance areas, in general; however, site-specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat, f. Surface pipelines will be laid such that a 300' buffer exists between the edge of the right of way and plants and 300' between the edge of right of way and avoidance areas; use stabilizing and anchoring techniques when the pipeline crossed suitable habitat to ensure pipelines don't move towards the population; site-specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat, g. Construction activities will not occur from April 15th through June 5th within occupied habitat, h. Before and during construction, areas for avoidance should be visually identifiable in the field, e.g., flagging temporary fencing, rebar, etc., i. Place produced oil, water, or condensate tanks in centralized locations, away from occupied habitat, and j. Minimize the disturbed area of producing well locations through interim and final reclamation. Reclaim well pads following drilling to the smallest area possible. <p>5. Occupied Last Chance Townsendia habitats within 300' of the edge of the surface pipelines' rights-of-way, 300' of the edge of the roads' rights-of-way, and 300' from the edge of the well pad shall be monitored for a period of three years after ground disturbing activities. Monitoring will include annual plant surveys to determine plant and habitat</p>

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	<p>impacts relative to project facilities. Annual reports shall be provided to the BLM and the Service. To ensure desired results are being achieved, minimization measures will be evaluated and may be changed after a thorough review of the monitoring results and annual reports during annual meetings between the BLM and the Service.</p> <p>6. Re-initiation of section 7 consultation with the Service will be sought immediately if any loss of plants or occupied habitat for the Last Chance Townsendia is anticipated as a result of project activities.</p> <p>Additional site-specific measures may also be employed to avoid or minimize effects to the species. These additional measures will be developed and implemented in consultation with the U.S. Fish and Wildlife Service to ensure continued compliance with the ESA.</p>
<p>T&E-15</p>	<p style="text-align: center;">WRIGHT FISHHOOK CACTUS (<i>SCLEROCACTUS WRIGHTIAE</i>)</p> <p>In order to minimize effects to the federally threatened Wright Fishhook Cactus, the Bureau of Land Management (BLM), in coordination with the U.S. Fish and Wildlife Service (Service), has developed the following avoidance and minimization measures. Implementation of these measures will help ensure the activities carried out during oil and gas development (including but not limited to drilling, production, and maintenance operations) are in compliance with the endangered Species Act (ESA). For the purposes of this document, the following terms are so defined: <i>Potential habitat</i> is defined as areas which satisfy the broad criteria of the species habitat description; usually determined by preliminary, in-house assessment. <i>Suitable habitat</i> is defined as areas which contain or exhibit the specific components or constituents necessary for plant persistence; determined by field inspection and/or surveys; may or may not contain Wright Fishhook Cactus; habitat descriptions can be found in Federal Register Notice and species recovery plan links at <http://www.fws.gov/endangered/wildlife.html>. <i>Occupied habitat</i> is defined as areas currently or historically known to support Wright Fishhook Cactus; synonymous with “known habitat.” The following avoidance and minimization measures should be included in the Plan of Development:</p> <ol style="list-style-type: none"> 1. Pre-project habitat assessments will be completed across 100% of the project disturbance area within potential habitat¹ prior to any ground disturbing activities (including ATV use) to determine if suitable Wright Fishhook Cactus habitat is present. 2. Site inventories will be conducted within suitable habitat to determine occupancy. Where standard surveys are technically infeasible and otherwise hazardous due to topography, slope, etc. suitable habitat will be assessed and mapped for avoidance (hereafter, “avoidance areas”); in such cases, in general, 300’ buffers will be maintained between surface disturbance and avoidance areas. However, site-specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat. Where conditions allow, inventories: <ol style="list-style-type: none"> a. Must be conducted by qualified individuals(s) and according to BLM and Service accept survey protocols,

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	<ul style="list-style-type: none"> b. Will be conducted in suitable and occupied habitat for all areas proposed for surface disturbance prior to initiation of project activities and within the same growing season, at a time when the plant can be detected (usually April 15th to June 5th, however, surveyors should verify that the plant is flowering by contacting a BLM or FWS botanist or demonstrating that the nearest known population is in flower), c. Will occur within 300' from the centerline of the proposed right-of-way for surface pipelines or roads; and within 300' from the perimeter of disturbance for the proposed well pad including the well pad, d. Will include, but not be limited to, plant species lists and habitat characteristics, and e. Will be valid until April 15th the following year. <p>3. Design project infrastructure to minimize impacts within suitable habitat:</p> <ul style="list-style-type: none"> a. Where standard surveys are technically infeasible, infrastructure and activities will avoid all suitable habitat (avoidance areas) and incorporate 300' buffers, in general; however, site-specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat, b. Reduce well pad size to the minimum needed, without compromising safety, c. Where technically and economically feasible, use directional drilling or multiple wells from the same pad, d. Limit new access routes created by the project, e. Roads and utilities should share common rights-of-way where possible, f. Reduce the width of rights-of-way and minimize the depth of excavation needed for the road bed; where feasible, use the natural ground surface for the road within habitat, g. Place signing to limit off-road travel in sensitive areas, and h. Stay on designated routes and other cleared/approved areas, i. All disturbed areas will be revegetated with native species comprised of species indigenous to the area and non-native species that are not likely to invade other areas. <p>4. Within occupied habitat, project infrastructure will be designed to avoid direct disturbance and minimize indirect impacts to populations and to individual plants:</p> <ul style="list-style-type: none"> a. Follow the above recommendations (3.) for project design within suitable habitats, b. To avoid water flow and/or sedimentation into occupied habitat and avoidance areas, silt fences, hay bales, and similar structures or practices will be incorporated into the project design; appropriate placement of fill is encouraged, c. Construction of roads will occur such that the edge of the right of way is at least 300' from any plant and 300' from avoidance areas,

NUMBER	THREATENED & ENDANGERED SPECIES NOTICES
	<ul style="list-style-type: none"> d. Roads will be graveled with occupied habitat; the operator is encouraged to apply water for dust abatement to such areas from April 15th to June 5th (flowering period); dust abatement applications will be comprised of water only, e. The edge of the well pad should be located at least 300' away from plants and avoidance areas, in general; however, site-specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat, f. Surface pipelines will be laid such that a 300' buffer exists between the edge of the right of way and plants and 300' between the edge of right of way and avoidance areas; use stabilizing and anchoring techniques when the pipeline crossed suitable habitat to ensure pipelines don't move towards the population; site-specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat, g. Construction activities will not occur from April 15th through June 5th within occupied habitat, h. Before and during construction, areas for avoidance should be visually identifiable in the field, e.g., flagging temporary fencing, rebar, etc., i. Place produced oil, water, or condensate tanks in centralized locations, away from occupied habitat, and j. Minimize the disturbed area of producing well locations through interim and final reclamation. Reclaim well pads following drilling to the smallest area possible. <p>5. Occupied Wright Fishhook Cactus habitats within 300' of the edge of the surface pipelines' rights-of-way, 300' of the edge of the roads' rights-of-way, and 300' from the edge of the well pad shall be monitored for a period of three years after ground disturbing activities. Monitoring will include annual plant surveys to determine plant and habitat impacts relative to project facilities. Annual reports shall be provided to the BLM and the Service. To ensure desired results are being achieved, minimization measures will be evaluated and may be changed after a thorough review of the monitoring results and annual reports during annual meetings between the BLM and the Service.</p> <p>6. Re-initiation of section 7 consultation with the Service will be sought immediately if any loss of plants or occupied habitat for the Wright Fishhook Cactus is anticipated as a result of project activities.</p> <p>Additional site-specific measures may also be employed to avoid or minimize effects to the species. These additional measures will be developed and implemented in consultation with the U.S. Fish and Wildlife Service to ensure continued compliance with the ESA.</p>
T&E-17	<p style="text-align: center;">SAN RAFAEL CACTUS (<i>PEDIOCACTUS DESPAINII</i>)</p> <p>In order to minimize effects to the federally threatened San Rafael Cactus, the Bureau of Land Management (BLM), in coordination with the U.S. Fish and Wildlife Service (Service), has developed the following avoidance and minimization measures. Implementation of these measures will help ensure the activities carried out during oil and gas development</p>

NUMBER	THREATENED & ENDANGERED SPECIES NOTICES
	<p>(including but not limited to drilling, production, and maintenance operations) are in compliance with the endangered Species Act (ESA). For the purposes of this document, the following terms are so defined: <i>Potential habitat</i> is defined as areas which satisfy the broad criteria of the species habitat description; usually determined by preliminary, in-house assessment. <i>Suitable habitat</i> is defined as areas which contain or exhibit the specific components or constituents necessary for plant persistence; determined by field inspection and/or surveys; may or may not contain San Rafael Cactus; habitat descriptions can be found in Federal Register Notice and species recovery plan links at http://www.fws.gov/endangered/wildlife.html. <i>Occupied habitat</i> is defined as areas currently or historically known to support San Rafael Cactus; synonymous with “known habitat.” The following avoidance and minimization measures should be included in the Plan of Development:</p> <ol style="list-style-type: none"> 1. Pre-project habitat assessments will be completed across 100% of the project disturbance area within potential habitat¹ prior to any ground disturbing activities (including ATV use) to determine if suitable San Rafael Cactus habitat is present. 2. Site inventories will be conducted within suitable habitat to determine occupancy. Where standard surveys are technically infeasible and otherwise hazardous due to topography, slope, etc. suitable habitat will be assessed and mapped for avoidance (hereafter, “avoidance areas”); in such cases, in general, 300’ buffers will be maintained between surface disturbance and avoidance areas. However, site-specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat. Where conditions allow, inventories: <ol style="list-style-type: none"> a. Must be conducted by qualified individuals(s) and according to BLM and Service accept survey protocols, b. Will be conducted in suitable and occupied habitat for all areas proposed for surface disturbance prior to initiation of project activities and within the same growing season, at a time when the plant can be detected (usually April 15th to June 5th, however, surveyors should verify that the plant is flowering by contacting a BLM or FWS botanist or demonstrating that the nearest known population is in flower), c. Will occur within 300’ from the centerline of the proposed right-of-way for surface pipelines or roads; and within 300’ from the perimeter of disturbance for the proposed well pad including the well pad, d. Will include, but not be limited to, plant species lists and habitat characteristics, and e. Will be valid until April 15th the following year. 3. Design project infrastructure to minimize impacts within suitable habitat: <ol style="list-style-type: none"> a. Where standard surveys are technically infeasible, infrastructure and activities will avoid all suitable habitat (voidance areas) and incorporate 300’ buffers, in general; however, site-specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat, b. Reduce well pad size to the minimum needed, without compromising safety,

NUMBER	THREATENED & ENDANGERED SPECIES NOTICES
	<ul style="list-style-type: none"> c. Where technically and economically feasible, use directional drilling or multiple wells from the same pad, d. Limit new access routes created by the project, e. Roads and utilities should share common rights-of-way where possible, f. Reduce the width of rights-of-way and minimize the depth of excavation needed for the road bed; where feasible, use the natural ground surface for the road within habitat, g. Place signing to limit off-road travel in sensitive areas, and h. Stay on designated routes and other cleared/approved areas, i. All disturbed areas will be re-vegetated with native species comprised of species indigenous to the area and non-native species that are not likely to invade other areas. <p>4. Within occupied habitat, project infrastructure will be designed to avoid direct disturbance and minimize indirect impacts to populations and to individual plants:</p> <ul style="list-style-type: none"> a. Follow the above recommendations (3.) for project design within suitable habitats, b. To avoid water flow and/or sedimentation into occupied habitat and avoidance areas, silt fences, hay bales, and similar structures or practices will be incorporated into the project design; appropriate placement of fill is encouraged, c. Construction of roads will occur such that the edge of the right of way is at least 300' from any plant and 300' from avoidance areas, d. Roads will be graveled with occupied habitat; the operator is encouraged to apply water for dust abatement to such areas from April 15th to June 5th (flowering period); dust abatement applications will be comprised of water only, e. The edge of the well pad should be located at least 300' away from plants and avoidance areas, in general; however, site-specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat, f. Surface pipelines will be laid such that a 300' buffer exists between the edge of the right of way and plants and 300' between the edge of right of way and avoidance areas; use stabilizing and anchoring techniques when the pipeline crossed suitable habitat to ensure pipelines don't move towards the population; site-specific distances will need to be approved by FWS and BLM when disturbance will occur upslope of habitat, g. Construction activities will not occur from April 15th through June 5th within occupied habitat, h. Before and during construction, areas for avoidance should be visually identifiable in the field, e.g., flagging temporary fencing, rebar, etc., i. Place produced oil, water, or condensate tanks in centralized locations, away from occupied habitat, and

NUMBER	THREATENED & ENDANGERED SPECIES NOTICES
	<p>j. Minimize the disturbed area of producing well locations through interim and final reclamation. Reclaim well pads following drilling to the smallest area possible.</p> <p>5. Occupied San Rafael Cactus habitats within 300' of the edge of the surface pipelines' rights-of-way, 300' of the edge of the roads' rights-of-way, and 300' from the edge of the well pad shall be monitored for a period of three years after ground disturbing activities. Monitoring will include annual plant surveys to determine plant and habitat impacts relative to project facilities. Annual reports shall be provided to the BLM and the Service. To ensure desired results are being achieved, minimization measures will be evaluated and may be changed after a thorough review of the monitoring results and annual reports during annual meetings between the BLM and the Service.</p> <p>6. Re-initiation of section 7 consultation with the Service will be sought immediately if any loss of plants or occupied habitat for the San Rafael Cactus is anticipated as a result of project activities.</p> <p>Additional site-specific measures may also be employed to avoid or minimize effects to the species. These additional measures will be developed and implemented in consultation with the U.S. Fish and Wildlife Service to ensure continued compliance with the ESA.</p>
T&E-27	<p style="text-align: center;">YELLOW-BILLED CUCKOO</p> <p>The lessee/operator is given notice that the lands in or adjacent to this parcel contain potentially suitable habitat that falls within the range for western yellow-billed cuckoo, a Federally listed species. Avoidance or use restrictions may be placed on portions of the lease. Application of appropriate measures will depend whether the action is temporary or permanent, and whether it occurs within or outside the breeding and nesting season. A temporary action is completed prior to the following breeding season, leaving no permanent structures and resulting in no permanent habitat loss. A permanent action could continue for more than one breeding season and/or cause a loss of habitat or displace western yellow-billed cuckoos through disturbances. The following avoidance and minimization measures have been designed to ensure activities carried out on the lease are in compliance with the Endangered Species Act (ESA). Integration of and adherence to these measures will facilitate review and analysis of any submitted permits under the authority of this lease. Following these measures could reduce the scope of ESA, Section 7 consultation at the permit stage. Avoidance and minimization measures include the following:</p> <ol style="list-style-type: none"> 1. Habitat suitability within the parcel and/or within a 0.5-mile buffer of the parcel will be identified prior to lease development to identify potential survey needs. Habitat suitability should be determined in accordance with <i>Guidelines for the identification of suitable habitat for WYBCU in Utah</i>.

NUMBER	THREATENED & ENDANGERED SPECIES NOTICES
	<ol style="list-style-type: none"> 2. Protocol Breeding Season Surveys will be required in suitable habitats prior to operations unless species occupancy and distribution information is complete and available. All Surveys must be conducted by permitted individual(s), and be conducted according to protocol. 3. For all temporary actions that may impact cuckoo or suitable habitat: <ol style="list-style-type: none"> a. If action occurs entirely outside of the cuckoo breeding season (June 1 to August 31), and leaves no structure or habitat disturbance, action can proceed without a presence/absence survey. b. If action is proposed between June 1 to August 31, presence/absence surveys for cuckoo will be conducted prior to commencing activity. If cuckoo are detected, activity should be delayed until September 1. c. Eliminate access roads created by the project through such means as raking out scars, revegetation, gating access points, etc. 4. For all permanent actions that may impact cuckoo or suitable habitat: <ol style="list-style-type: none"> a. Protocol level surveys by permitted individuals will be conducted prior to commencing activities. b. If cuckoos are detected, no activity will occur within 0.25-mile of occupied habitat. c. Avoid drilling and permanent structures within 0.25-mile of suitable habitat unless absence is determined according to protocol level survey conducted by permitted individual(s). d. Ensure noise levels at 0.25-mile from suitable habitat do not exceed baseline conditions. Placement of permanent noise-generating facilities should be determined by a noise analysis to ensure noise does not encroach upon the 0.25-mile buffer for suitable habitat. 5. Temporary or permanent actions will require monitoring throughout the duration of the project to ensure that western yellow-billed cuckoo or its habitat is not affected in a manner or to an extent not previously considered. Avoidance and minimization measures will be evaluated throughout the duration of the project. 6. Water produced as by-product of drilling or pumping will be managed to ensure maintenance or enhancement of riparian habitat. 7. Where technically or economically feasible, use directional drilling or multiple wells from the same pad to reduce surface disturbance and eliminate drilling in suitable habitat. Ensure that such directional drilling does not intercept or degrade alluvial aquifers. 8. Ensure that water extraction or disposal practices do not result in a change of hydrologic regime that would result in loss or degradation of riparian habitat

NUMBER	THREATENED & ENDANGERED SPECIES NOTICES
	<p>9. Re-vegetate with native species all areas of surface disturbance within riparian areas and/or adjacent uplands.</p> <p>Additional measures to avoid or minimize effects to the species may be developed and implemented in consultation with the U.S. Fish and Wildlife Service between the lease sale stage and lease development stage to ensure continued compliance with the ESA.</p>
T&E-29	<p style="text-align: center;">JONES CYCLADENIA – POTENTIAL, SUITABLE AND OCCUPIED HABITAT</p> <p>The lessee/operator is given notice that the lands located in this parcel contain potential habitat for Jones cycladenia.</p> <p>In order to minimize effects to the Federally threatened Jones cycladenia, the BLM, in coordination with the USFWS has developed the following avoidance and minimization measures. Implementation of these measures will help ensure the activities carried out during oil and gas development (including but not limited to drilling, production, and maintenance operations) are in compliance with the ESA. For the purposes of this document, the following terms are so defined: <i>potential habitat</i> is defined as areas that satisfy the broad criteria of the species habitat description, usually determined by preliminary, in-house assessment. <i>Suitable habitat</i> is defined as areas that contain or exhibit the specific components or constituents necessary for plant persistence determined by field inspection and/or surveys; it may or may not contain Jones cycladenia; habitat descriptions can be found in Federal Register Notice and species recovery plan links at <http://www.fws.gov/endangered/species/>. <i>Occupied habitat</i> is defined as areas currently or historically known to support Jones cycladenia, synonymous with “known habitat.” The following avoidance and minimization measures should be included in the Plan of Development:</p> <ol style="list-style-type: none"> 1. Pre-project habitat assessments will be completed across 100 percent of the project disturbance area within potential habitat1 prior to any ground disturbing activities to determine if suitable Jones cycladenia habitat is present. 2. Species surveys will be conducted within suitable habitat to determine occupancy. Where standard surveys are technically infeasible and otherwise hazardous, due to topography, slope, etc., suitable habitat will be assessed and mapped for avoidance (hereafter, “avoidance areas”); in such cases, 300 foot buffers will be maintained between surface disturbance and avoidance areas. However, site specific distances will need to be approved by USFWS and BLM when disturbance will occur upslope of habitat. Where conditions allow, surveys: <ol style="list-style-type: none"> a. Must be conducted by qualified individuals(s) and according to BLM and Service accepted survey protocols.

NUMBER	THREATENED & ENDANGERED SPECIES NOTICES
	<ul style="list-style-type: none"> b. Will be conducted in suitable and occupied habitat for all areas proposed for surface disturbance prior to initiation of project activities and within the same growing season at a time when the plant can be detected (usually April 15 to June 5; however, surveyors should verify that the plant is flowering by contacting a BLM or USFWS botanist or demonstrating that the nearest known population is in flower), c. Will occur within 300 feet from the edge of the proposed right-of-way (ROW) and/or project disturbance for surface pipelines, roads, well pads, and other facilities requiring removal of vegetation, d. Will include, but not be limited to, plant species lists and habitat characteristics. e. Will be valid until April 15 of the following year. f. Clearance surveys in occupied habitat will be combined with historic plant location data for that particular site to delineate the outer boundary of occupied habitat. The 300 foot avoidance buffer will then be applied to the outer boundary of occupied habitat for that site. This evaluation will occur in coordination with the BLM and Service to ensure that the appropriate buffer is applied to protect both active and dormant Jones Cycladenia plants in occupied habitat. g. Electronic copies of clearance survey reports (included appendices) and GIS shape files will be sent no later than December 31st to each of the following: <ul style="list-style-type: none"> - Utah Natural Heritage Program (with copies of NHP field survey forms); - Applicable/affected land owners and/or management agencies; and - U.S. Fish and Wildlife Service Utah Field Office (mailing address: 2369 West Orton Circle, Suite 50, West Valley City, Utah 84119). <p>3. Design project infrastructure to minimize impacts within suitable habitat:</p> <ul style="list-style-type: none"> a. Where standard surveys are technically infeasible, infrastructure and activities will avoid all suitable habitat (avoidance areas) and incorporate 300 foot buffers, in general; however, site-specific distances will need to be approved by USFWS and BLM when disturbance will occur upslope of habitat. b. Reduce well pad size to the minimum needed without compromising safety. c. Where technically and economically feasible, use directional drilling or multiple wells from the same pad. d. Roads and utilities should share common ROWs where possible. e. Reduce the width of ROWs and minimize the depth of excavation needed for the road bed; where feasible, use the natural ground surface for the road within habitat. f. Place signing to limit off-road travel in sensitive areas.

NUMBER	THREATENED & ENDANGERED SPECIES NOTICES
	<p>g. Stay on designated routes and other cleared/approved areas.</p> <p>h. All disturbed areas will be re-vegetated with species native to the region, or seed mixtures approved by the action agency and USFWS.</p> <p>4. Where there is occupied habitat, project infrastructure will be designed to avoid direct disturbance and indirect impacts to populations and to individual plants:</p> <p>a. Follow the above recommendations in Section 3 for project design within suitable habitats.</p> <p>b. To avoid water flow and/or sedimentation into occupied habitat and avoidance areas, silt fences, hay bales, and similar structures or practices will be incorporated into the project design; appropriate placement of fill is encouraged.</p> <p>c. Construction of roads will occur such that the edge of the ROW is at least 300 feet from: 1) any plant; 2) the outer boundary of occupied habitat and; 3) avoidance areas.</p> <p>d. Existing roads will be graveled within 300 feet of occupied habitat; the operator is encouraged to apply water for dust abatement to such areas from April 15 to June 5 (flowering period); dust abatement applications will be comprised of water only.</p> <p>e. The edge of the well pad should be located at least 300 feet away from plants and avoidance areas, in general; however, site specific distances will need to be approved by USFWS and BLM when disturbance will occur upslope of habitat.</p> <p>f. Surface pipelines will be laid such that a 300 foot buffer exists between the edge of the ROW and plants and 300 feet between the edge of ROW and avoidance areas; use stabilizing and anchoring techniques when the pipeline crossed suitable habitat to ensure pipelines don't move towards the population; site specific distances will need to be approved by USFWS and BLM when disturbance will occur upslope of habitat.</p> <p>g. Construction activities will not occur within occupied habitat.</p> <p>h. Before and during construction, areas for avoidance should be visually identifiable in the field, e.g., flagging temporary fencing, rebar, etc.</p> <p>i. A qualified botanist will be onsite during construction to monitor the surface disturbance activity and assist with implementation of applicable conservation measures.</p> <p>j. Place produced oil, water, or condensate tanks in centralized locations, away from occupied habitat.</p> <p>k. Minimize the disturbed area of producing well locations through interim and final reclamation. Reclaim well pads following drilling to the smallest area possible.</p>

NUMBER	THREATENED & ENDANGERED SPECIES NOTICES
	<p>5. Dust abatement and reduced speed limits will be applied during flowering dates (April 15 through June 5) within 300 feet of suitable and occupied habitat, including unoccupied suitable habitat.</p> <p>6. For projects that cannot implement the measures or avoidance buffers identified in number 4 above, site specific conservation measures will be developed in coordination with USFWS. Occupied Jones cycladenia habitats within 300 feet of the edge of the surface pipelines' ROWs, 300 feet of the edge of the roads' ROWs, and 300 feet from the edge of the well pad shall be monitored for a period of three years after ground disturbing activities. Monitoring will include annual plant surveys to determine plant and habitat impacts relative to project facilities. Annual reports shall be provided to the BLM and the USFWS. To ensure desired results are being achieved, minimization measures will be evaluated and may be changed after a thorough review of the monitoring results and annual reports during annual meetings between the BLM and the USFWS.</p> <p>7. Re-initiation of Section 7 consultation with the USFWS will be sought immediately if any loss of plants or occupied habitat for the Jones cycladenia is anticipated as a result of project activities.</p> <p>Additional site-specific measures may also be employed to avoid or minimize effects to the species. These additional measures will be developed and implemented in consultation with the USFWS to ensure continued compliance with the ESA.</p>

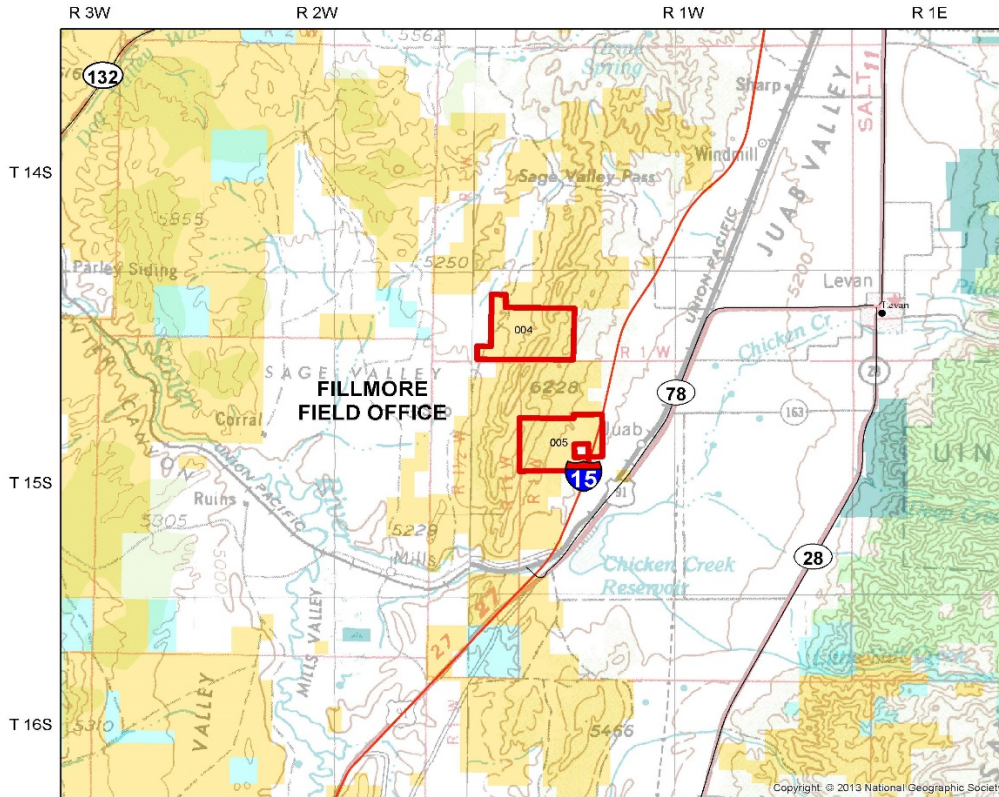
Appendix C – Figures/Maps

- Fillmore Field Office parcels overview.
- Fillmore Field Office parcels and oil and gas leasing categories.
- Richfield Field Office overview (north).
- Richfield Field Office oil and gas leasing categories for the northern parcels.
- Richfield Field Office overview of the southern parcels.
- Richfield Field Office oil and gas leasing categories for the southern parcels.
- Richfield Field Office (east) and Price Field Office Overview.
- Richfield Field Office (east) and Price Field Office oil and gas leasing categories.
- Vernal Field Office overview.
- Vernal Field Office oil and gas leasing categories.

BLM Utah Competitive Oil and Gas Lease Sale



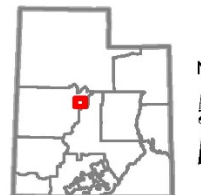
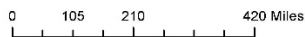
Fillmore Field Office September 2020 Oil and Gas Proposed Leases



Legend

- September 2020 nominated parcels
- Bureau of Land Management (BLM)
- Private
- State
- State Wildlife Reserve/Management Area
- US Forest Service (USFS)

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.
 Data compiled in NAD 1983 UTM Zone 12 North



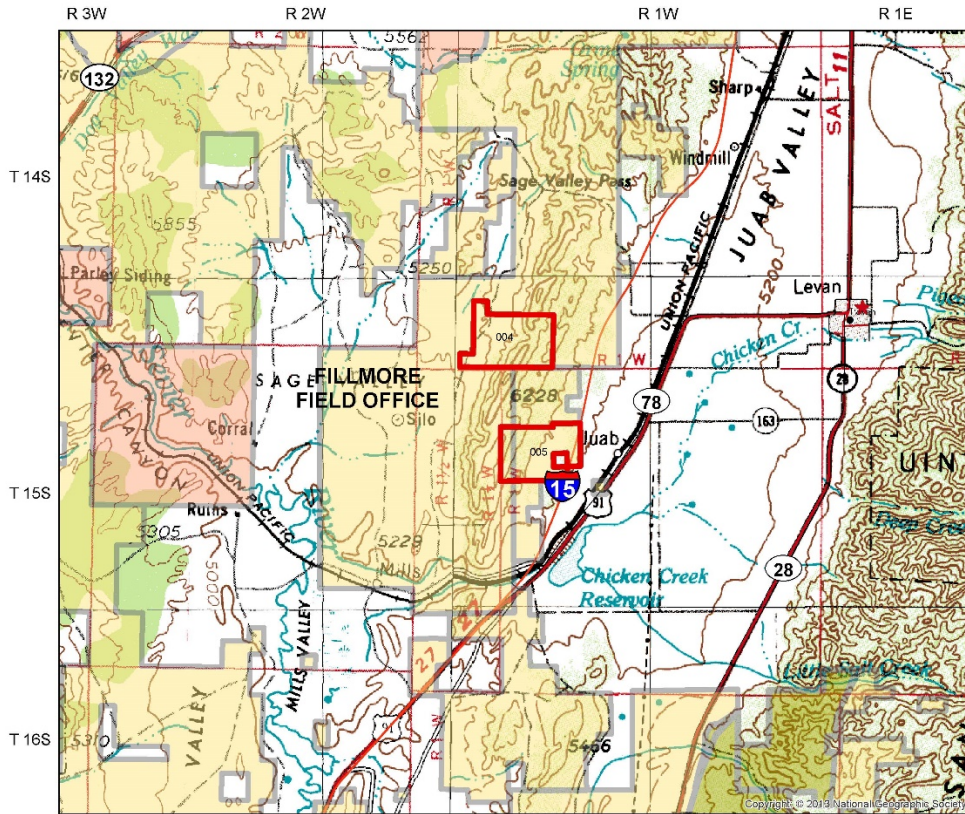
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Figure 6. Fillmore Field Office overview.

BLM Utah
Competitive Oil and Gas Lease Sale



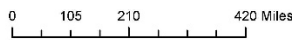
Fillmore Field Office
September 2020 Oil and Gas Proposed Leases



Legend

- September 2020 nominated parcels
- No Surface Occupancy
- Timing Limitation
- Standard Stipulations

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.
 Data compiled in NAD 1983 UTM Zone 12 North



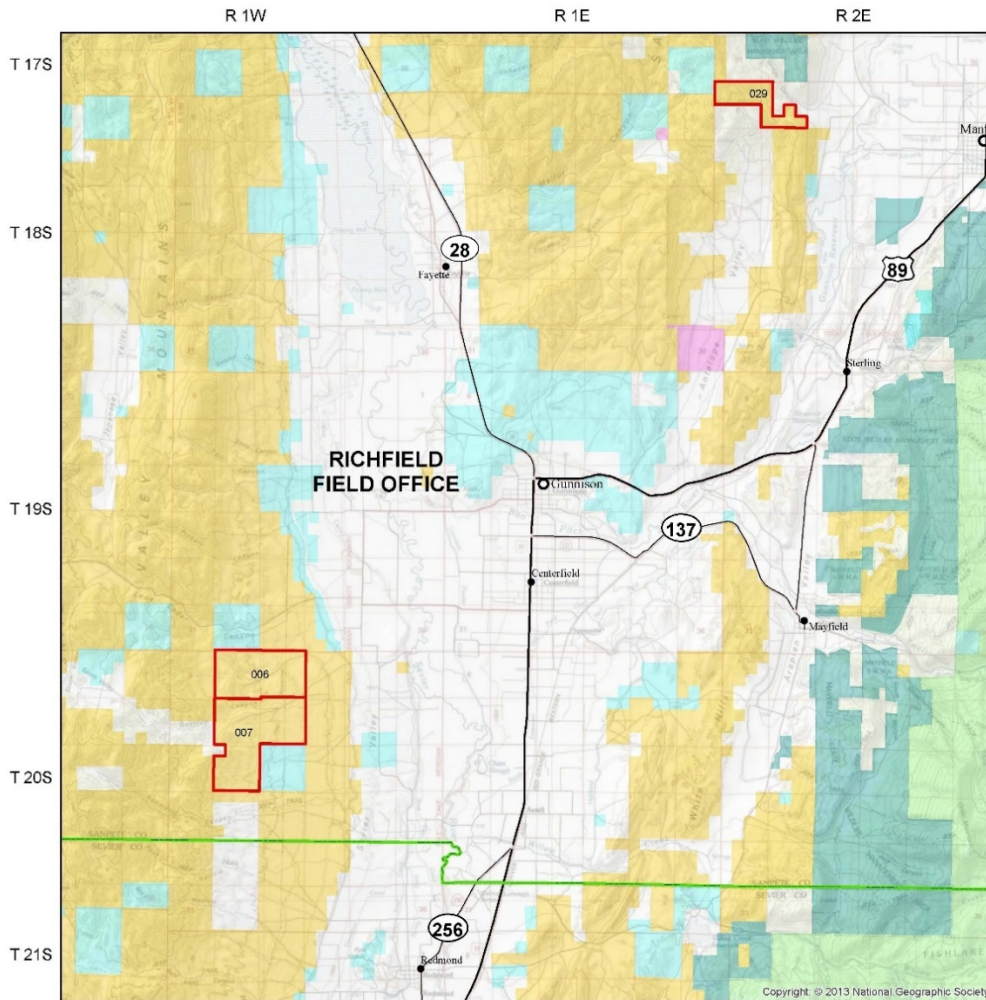
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Figure 7. Fillmore Field Office parcels and oil and gas leasing categories.

BLM Utah Competitive Oil and Gas Lease Sale



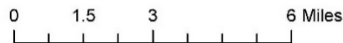
Richfield Field Office September 2020 Oil and Gas Proposed Leases



Legend

- September 2020 nominated parcels
- Bureau of Land Management (BLM)
- Military Reservations and Corps of Engineers
- Private
- State
- State Parks and Recreation
- State Wildlife Reserve/Management Area
- US Forest Service (USFS)

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.
 Data compiled in NAD 1983 UTM Zone 12 North



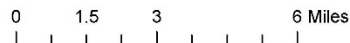
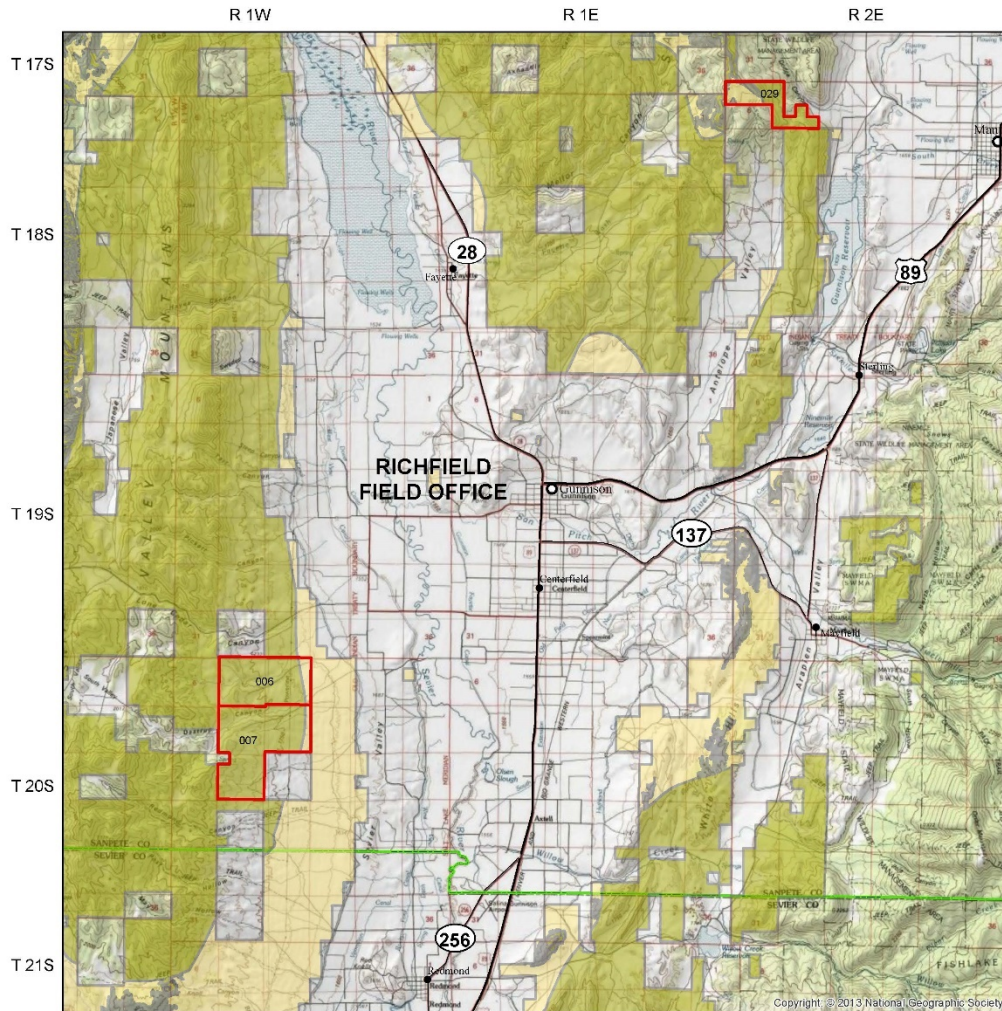
Map Date: 6/8/2020

Figure 8. Richfield Field Office overview (north).

BLM Utah Competitive Oil and Gas Lease Sale



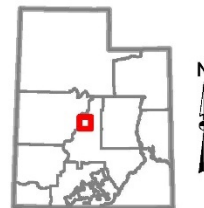
Richfield Field Office September 2020 Oil and Gas Proposed Leases



Legend

- September 2020 nominated parcels
- Timing Limitation
- Standard Stipulations

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.
 Data compiled in NAD 1983 UTM Zone 12 North



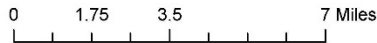
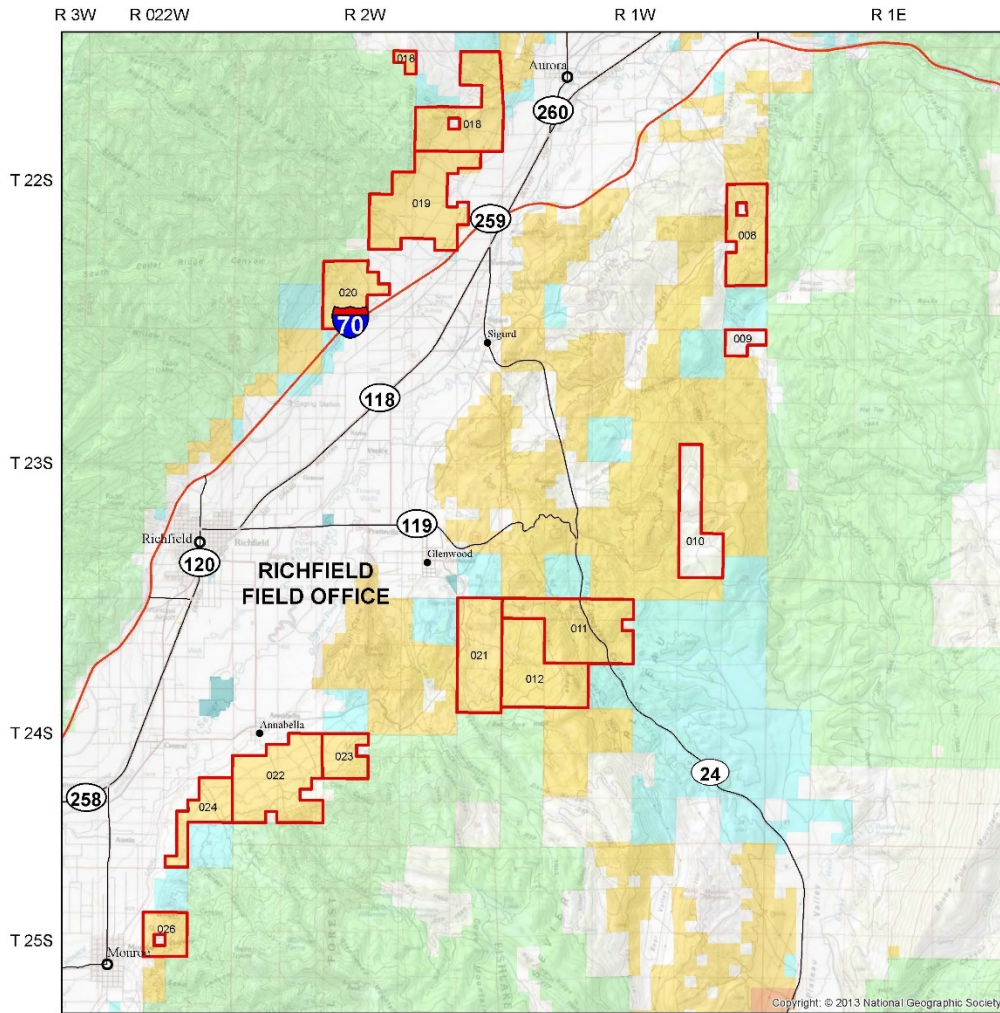
Map Date: 6/8/2020

Figure 9. Richfield Field Office oil and gas leasing categories for the northern parcels.

BLM Utah Competitive Oil and Gas Lease Sale



Richfield Field Office September 2020 Oil and Gas Proposed Leases



Legend

- September 2020 nominated parcels
- Bureau of Land Management (BLM)
- Indian Reservation (IR)
- Private
- State
- State Wildlife Reserve/Management Area
- US Forest Service (USFS)

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.
 Data compiled in NAD 1983 UTM Zone 12 North



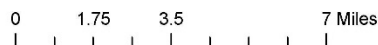
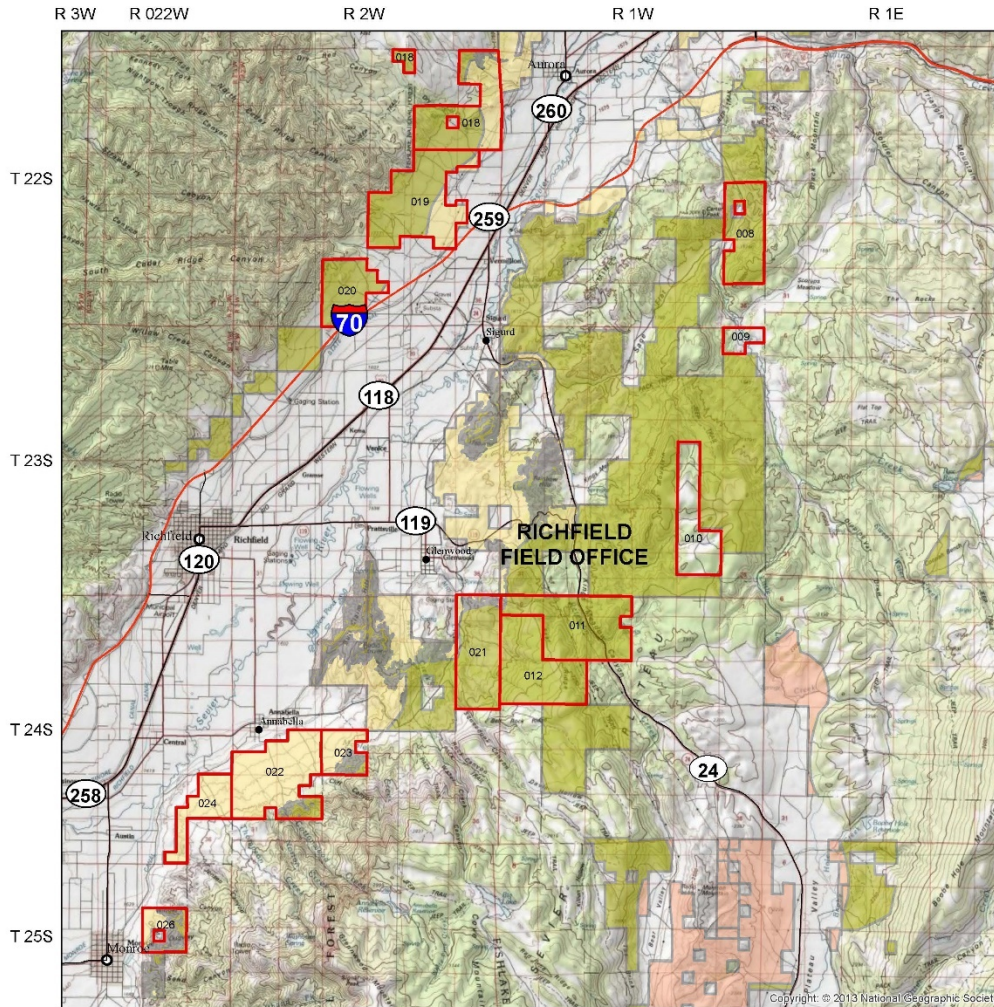
Map Date: 6/8/2020

Figure 10. Richfield Field Office overview of the southern parcels.

BLM Utah Competitive Oil and Gas Lease Sale



Richfield Field Office September 2020 Oil and Gas Proposed Leases



Legend

- September 2020 nominated parcels
- No Surface Occupancy
- Timing Limitation
- Standard Stipulations

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.
 Data compiled in NAD 1983 UTM Zone 12 North



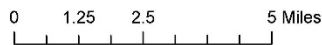
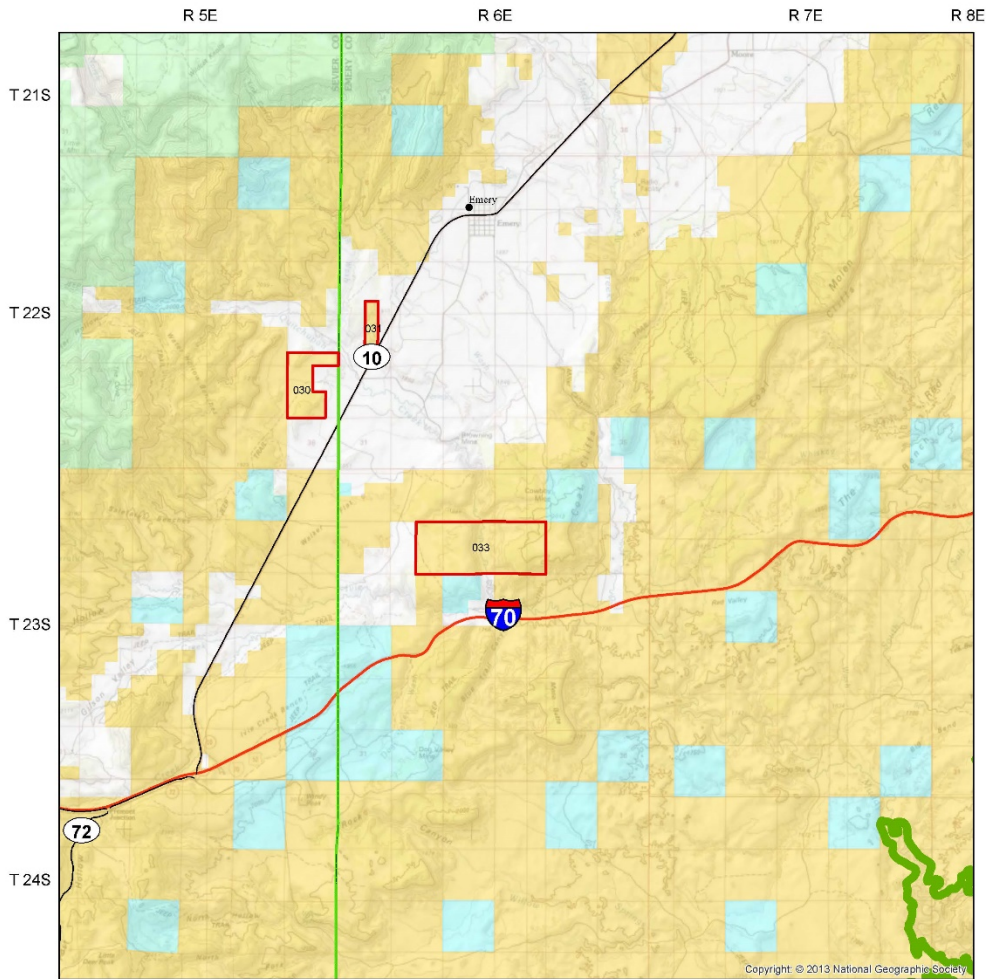
Map Date: 6/8/2020

Figure 11. Richfield Field Office oil and gas leasing categories for the southern parcels.

BLM Utah Competitive Oil and Gas Lease Sale



Richfield Field Office and Price Field Office September 2020 Oil and Gas Proposed Leases



Legend

- September 2020 nominated parcels
- Bureau of Land Management (BLM)
- Private
- State
- US Forest Service (USFS)

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.
 Data compiled in NAD 1983 UTM Zone 12 North



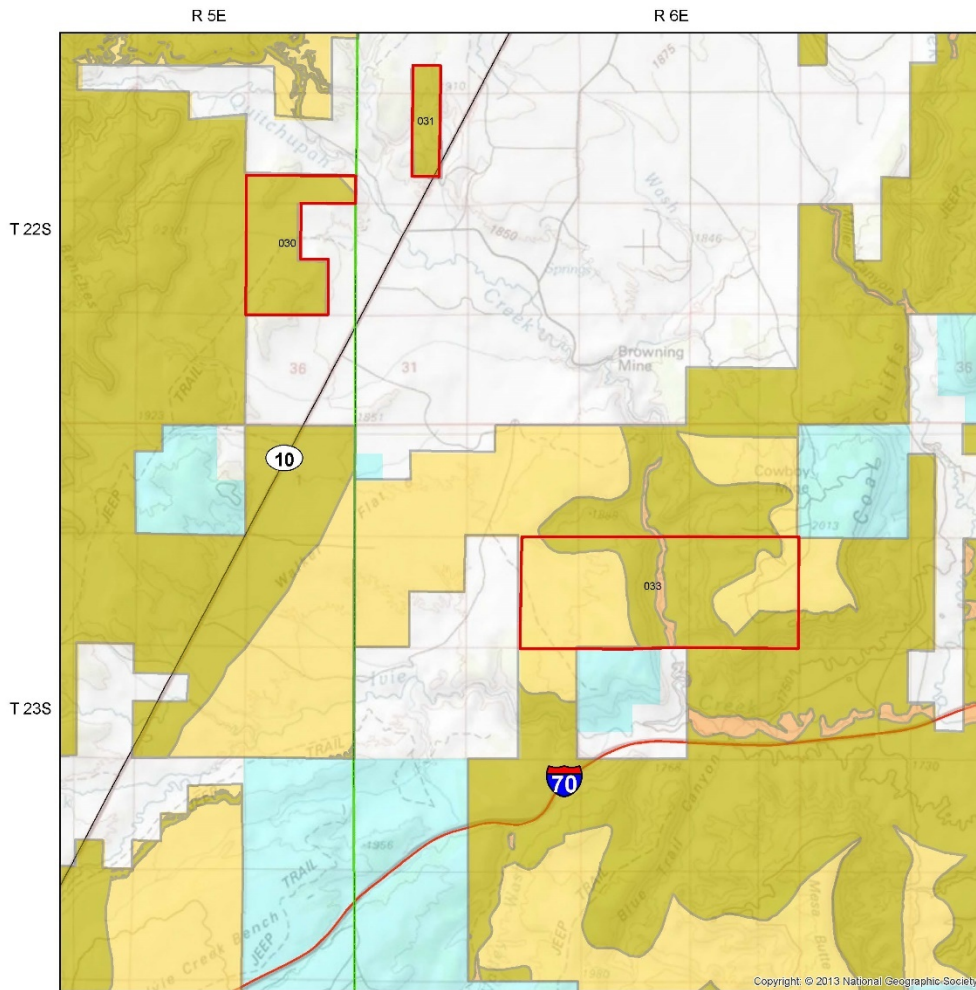
Map Date: 8/9/2020

Figure 12. Richfield Field Office (east) and Price Field Office overview.

BLM Utah Competitive Oil and Gas Lease Sale



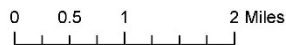
Richfield Field Office and Price Field Office September 2020 Oil and Gas Proposed Leases



Legend

- September 2020 nominated parcels
- Bureau of Land Management (BLM)
- Private
- State
- No Surface Occupancy
- Timing Limitation
- Standard Stipulations

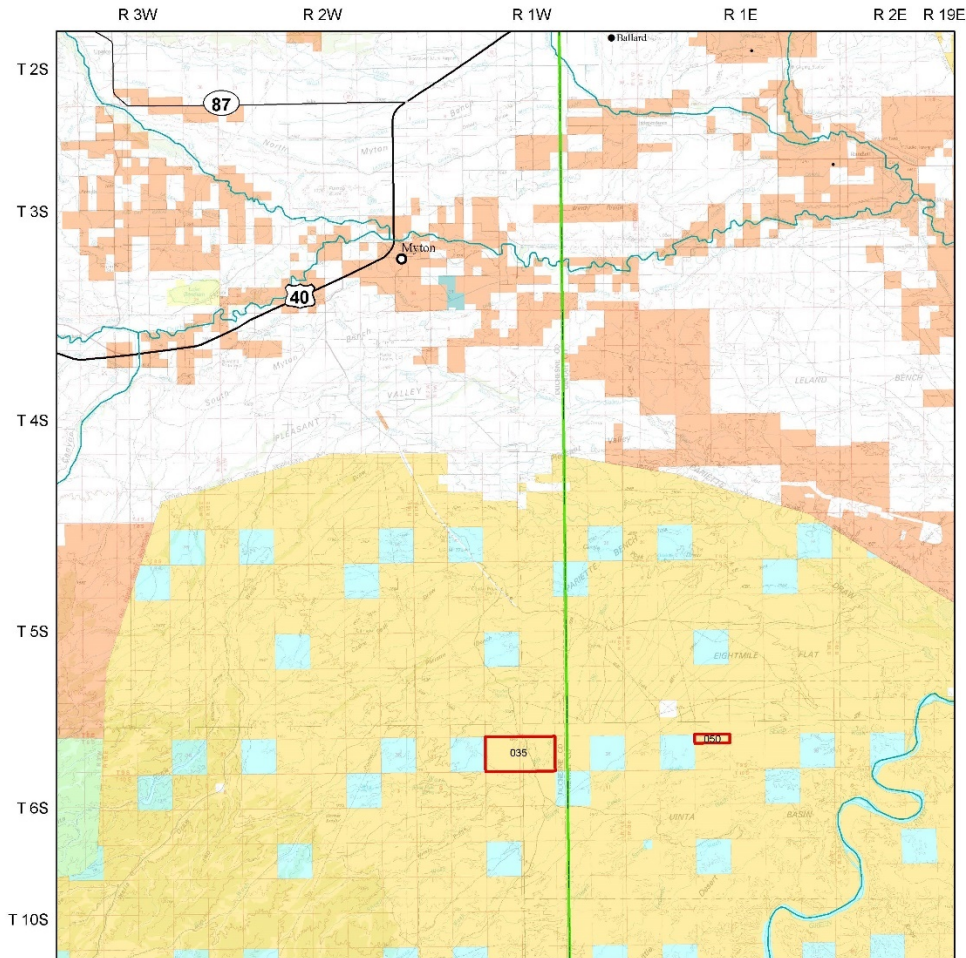
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.
 Data compiled in NAD 1983 UTM Zone 12 North



Map Date: 8/9/2020

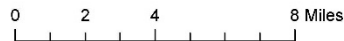
Figure 13. Richfield Field Office (east) and Price Field Office oil and gas leasing categories.

BLM Utah
Competitive Oil and Gas Lease Sale
Vernal Field Office
September 2020 Oil and Gas Proposed Leases



- September 2020 nominated parcels
- Bureau of Land Management (BLM)
- Bureau of Reclamation
- Indian Reservation (IR)
- Private
- State
- State Wildlife Reserve/Management Area
- US Forest Service (USFS)

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.
 Date compiled in NAD 1983 UTM Zone 12 North



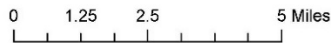
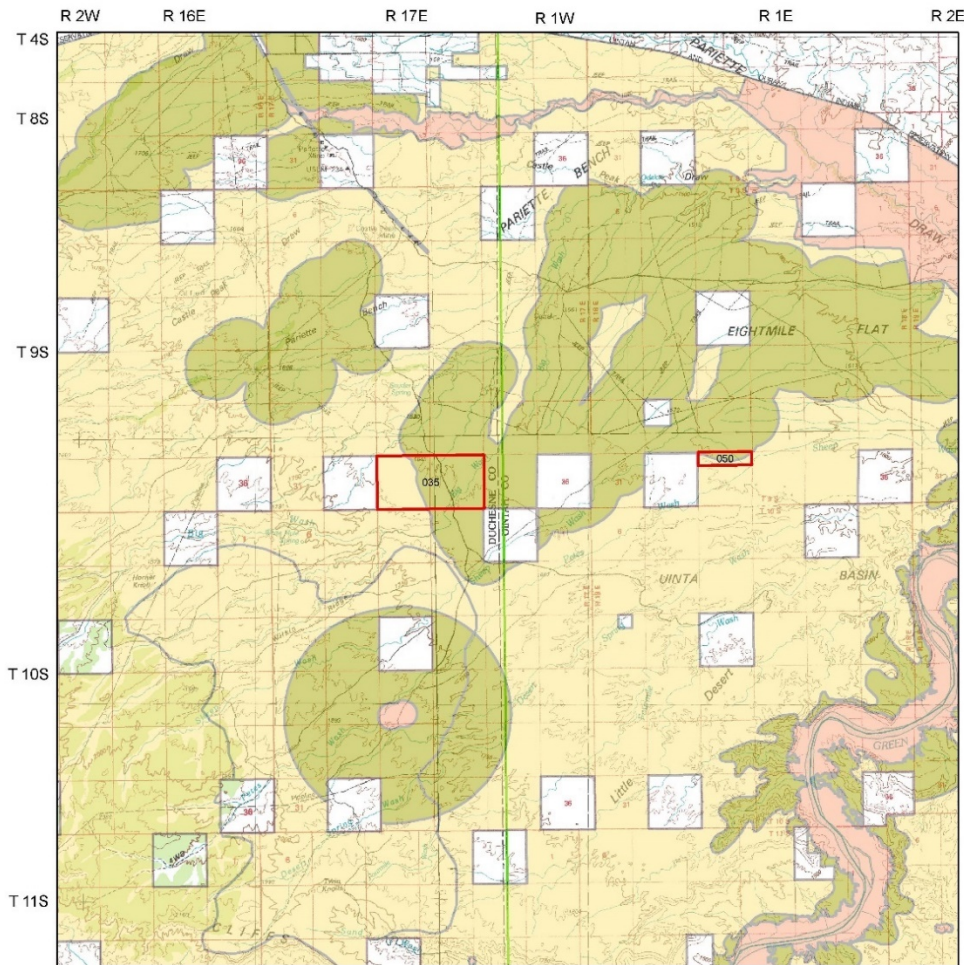
Map Date: 6/4/2020

Figure 14. Vernal Field Office overview.

BLM Utah Competitive Oil and Gas Lease Sale



Vernal Field Office September 2020 Oil and Gas Proposed Leases



Legend

- September 2020 nominated parcels
- No Surface Occupancy
- Timing Limitation
- Standard Stipulations

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.
Data compiled in NAD 1983 UTM Zone 12 North



Map Date: 6/4/2020

Figure 15. Vernal Field Office oil and gas leasing categories.

Appendix D – Interdisciplinary Parcel Review Team Checklist

DETERMINATION OF STAFF:

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/resource has been previously analyzed (i.e., FEIS, EAs, ARMPA, RMP) resulting in no further impact than what was analyzed, and previously disclosed

PI = present with potential for relevant impact that need to be analyzed in detail in the EA

Applicable to all Field Offices

Determination	Resource	Rationale for Determination	Parcel Reviewer
Resources And Issues Considered (Includes Supplemental Authorities Appendix 1 H-1790-1)			
Air			
PI	Air Quality	<p>Leasing is an administrative action and does not result in direct emissions of air pollutants. However, leasing of the parcels indirectly results in development that may include activities such as exploration, construction, drilling, completion, testing, and oil and gas production that could produce emissions of regulated air pollutants that could affect air quality. Development of all leased parcels is not expected given observed trends from past lease sales (BLM 2020). To mitigate impacts to air quality, the following stipulations and lease notices are applied to lease parcels:</p> <ul style="list-style-type: none"> • UT-S-01: Air Quality <ul style="list-style-type: none"> ○ Parcels: 006, 007, 008, 009, 010, 011, 012, 018, 019, 020, 021, 022, 023, 024, 026, 029, 030, 031, 033, 034, 035, 117, 120 • UT-LN-96: Air Quality Mitigation Measures <ul style="list-style-type: none"> ○ Parcels: All • UT-LN-99: Regional Ozone Formation Controls <ul style="list-style-type: none"> ○ Parcels: All • UT-LN-101: Air Quality <ul style="list-style-type: none"> ○ Parcels: All • UT-LN-102: Air Quality Analysis <ul style="list-style-type: none"> ○ Parcels: All <p>Any wells developed on parcels being offered in the September 2020 lease sale must also comply with state permitting rules for the oil and gas industry (Utah Administrative Code R307-500 series). Stipulations and state permitting rules effectively mitigate impacts to air quality by requiring controls that limit emissions and ensuring compliance with air regulatory requirements. Before development can be approved on parcels in nonattainment areas, the Clean Air Act rules (40 CFR Part 93, Subpart B) require a State or Federal Implementation Plan conformity review to show that development won't worsen air quality or prevent the</p>	Erik Vernon May 27, 2020

Determination	Resource	Rationale for Determination	Parcel Reviewer
Resources And Issues Considered (Includes Supplemental Authorities Appendix 1 H-1790-1)			
		<p>regulatory agencies from achieving attainment of the NAAQS. Lease notice UT-LN-102 informs a lessee that additional air quality analysis, which includes a conformity analysis, may be needed before developing parcels.</p> <p>The BLM coordinated with the National Park Service (NPS) Air Resource Division, regarding parcels included in the September 2020 lease sale.</p>	
PI	Greenhouse Gases	<p>Greenhouse Gases are composed mostly of CO₂, CH₄, N₂O, HFCs, PFCs, & SF₆. Emissions of GHG's may occur if parcels are developed. Development activities that produce GHG emissions include tailpipe exhaust from heavy equipment used for well construction and drilling, well operations, venting or flaring, and fugitive leaks. Additional emissions may occur during the transportation, distribution, processing, and end-use of produced oil and gas. Anthropogenic emissions of GHG's are a leading contributor to global climate change. Surface disturbing activity from development of lease parcels would reduce the lands carbon sequestration ability. Land use change would be temporary over the life of a well pad as reclamation should return the land to a condition approximately equal to that which existed prior to disturbance (BLM 2007). Site specific changes to sequestration cannot be quantified as factors such as vegetation type, amount of biomass, and future weather affecting plant regrowth are unknown at the leasing stage. The RFD of acres of disturbance would be approximately 0.0008% of the 33 million acres of federal land in Utah. Changes to carbon storage and sequestration will likely be well below the natural variability from wildfires and other land change that is reported in the USGS Federal Fossil Fuel GHG emissions report (USGS 2018). Changes to the lands carbon storage capability will not be analyzed in detail.</p>	Erik Vernon May 12, 2020
Environmental Justice and Socioeconomics			
PI	Environmental Justice	<p>The 2008 Moab RMP, 2008 Richfield RMP, 2008 Price RMP, 2008 Vernal RMP, 1989 House Range RMP, and the 2016 MLP identified no EJ population likely to suffer disproportionate impacts. 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 groups. Leasing the nominated parcels would not cause any disproportionately high and adverse effects on minority or low income populations. BMPs, SOPs and site specific mitigation may be applied at the APD stage as COAs.</p> <p>EJ populations, including minority and low income populations as well as concentrated populations of American Indians, are known to be present in the counties included in the study area. A lease sale by itself would not be expected to cause any disproportionate adverse impacts to these EJ populations. Should individual parcels move into exploration, development, and production, it will be necessary to evaluate the potential for EJ impacts on a case-by-case basis.</p>	<p>Bill Stevens 4/9/2020 Julie A. Suhr Pierce 6/5/2020</p>

Determination	Resource	Rationale for Determination	Parcel Reviewer
Resources And Issues Considered (Includes Supplemental Authorities Appendix 1 H-1790-1)			
PI	Socio-Economics	<p>The Proposed Action (lease sale) is not expected to cause any local or regional socioeconomic effects other than possible shares of bonus (winning bid) and rental payments that would go to the counties after the sale. Should parcels move into exploration, development, and production, there could be regional socioeconomic effects caused primarily by a limited influx of workers. There is also a potential that socioeconomic effects could occur as a result of changes in recreation and tourism activities due to parcel site activities, although such changes in activity are not anticipated at this time.</p> <p>Refer to the Headwaters Economics BLM Socioeconomic Profile report prepared on June 2, 2020 (Headwaters Economics 2020) (Bureau of Land Management Socioeconomic Profile). Additional information is contained in the Grand County general plan and its corresponding resource management plan. Land uses in county and parcel areas would continue. Land use plan (as amended) allocations would not be altered. BMPs, SOPs and site specific mitigation may be applied at the APD stage as COAs.</p>	<p>Bill Stevens 4/9/2020 Julie A. Suhr Pierce 6/5/2020</p>
Wildlife			
NP	Greater Sage-Grouse	<p>The lease parcels identified within the Moab, Richfield, Price, Vernal and Fillmore Field Office Resource Management Areas are located outside designated Greater Sage-grouse Priority and General Habitat Management Areas (PHMA & GHMA) and do not pose a threat to this species.</p>	<p>Jared Reese 6/8/2020</p>

**Color Country District
Richfield Field Office**

Determination	Resource	Rationale for Determination	Parcel Reviewer
Resources And Issues Considered (Includes Supplemental Authorities Appendix 1 H-1790-1)			
Recreation			
NP	Areas of Critical Environmental Concern	There are no Areas of Critical Environmental Concern within the proposed parcels. The Old Woman Front ACEC is 2.4 miles away from parcel 030.	Sheri Wysong May 12, 2020
NI	National Historic Trails	<p>The congressionally designated route for the Old Spanish Trail (OST) lies within two-miles of parcels: 018, 019, 020, , and 030. The management of this segment of the trail is determined by Decision TRV-9 from the RFO RMP:</p> <p style="padding-left: 40px;">For the Old Spanish Trail, following development of the comprehensive management plan for the National Historic Trail, the prepared Activity Trail Plan will include monitoring for all the segments within the Richfield Field Office (the main course and the Fremont Cutoff). Monitoring should include inspection of planned projects as well as on-the-ground projects for compliance to maintain remaining trail integrity. Monitoring will focus on assuring that the VRM objectives for public lands seen along the trail are met and that any interpretive signs installed along the Old Spanish National Historic Trail are surveyed for wear or vandalism. The number of projects evaluated and monitored for compliance with the Old Spanish Trail objectives will be reported in the Annual Program Summary and Planning update.</p> <p>There are no high potential sites or segments along the OST in this area; the trail in this area is on private lands and runs along the Interstate 70 corridor, so does not have a pristine setting. Upon conducting initial viewshed analysis the developable area of the parcels in question have both visible and non-visible areas from the OST corridor. The VRM objectives of III and IV and the management objectives of the Trail can be achieved without unduly constraining oil and gas development by attaching Conditions of Approval developed from site-specific analysis of the development proposal.</p> <p>Parcels 18, 19, 20 and 30 LN 65 Old Spanish Trail</p>	Sheri Wysong May 12, 2020
NI	Recreation	Dispersed recreation may occur on the parcels, but there are no specific sites on the parcels that are of particular importance to recreationalists.	Sheri Wysong May 12, 2020
NI	Travel/ Transportation	No scenic highways are in the vicinity of the parcels.	Sheri Wysong May 12, 2020

Determination	Resource	Rationale for Determination	Parcel Reviewer
NI	Visual Resources	Parcels are designated VRM III and IV. Development for oil and gas can occur under this level of management without undue constraint.	Sheri Wysong t May 12, 2020
NP	Wild and Scenic Rivers	No eligible or suitable river segments have been identified in the vicinity of the parcels.	Sheri Wysong May 12, 2020
NP	Wilderness/Wilderness Study Area	No wilderness or wilderness study areas are the in the vicinity of the parcels.	Sheri Wysong May 12, 2020
NP	Lands with wilderness characteristics	No lands with wilderness characteristics intersect the proposed parcels	Sheri Wysong May 12, 2020
Cultural			
NI	Cultural Resources	<p>BLM Archaeologists compiled cultural resource data from the Richfield Field Office cultural resource library, GIS data (CURES), the Utah Department of Heritage and Arts Archaeological Records Database (UDAM) and the Preservation Pro database. These data sources contain information on all of the recorded cultural resource sites and cultural resource surveys conducted within and adjacent to the proposed lease parcels.</p> <p>The BLM has drafted a cultural resources report for the remaining parcels included in the September 2020 sale. Once complete, the report will be sent for Tribal and Consulting Party review before submission to the Utah SHPO for review and concurrence on the finding of effect.</p> <p>BLM Archaeologists at the Field and State Office level reviewed this data against the lease sale parcel locations to determine if oil and gas development could occur in accordance with the appropriate Reasonably Foreseeable Development Scenario for each parcel, without incurring adverse effects to historic properties, taking into consideration impacts to cultural resources as well. The parcels were also reviewed for the application of stipulations and lease notices as required by the Richfield Field Office Resource Management Plan.</p> <p>For future undertakings related to this lease sale, the BLM will not approve any ground disturbing activities until it completes it's obligations to consider cultural resources under the NEPA, the NHPA, and other authorities specific to those future undertakings. Consideration of impacts to cultural resources and potential adverse effects to historic properties will be taken into account during the review stage of site-specific development plans.</p> <p>The Cultural Resource Stipulation as required by Handbook H-3120-1 applies to all parcels.</p>	Nicole Lohman 4/30/20

Determination	Resource	Rationale for Determination	Parcel Reviewer
NI	Native American Religious Concerns	Native American Tribes were contacted via Certified Letter on April 3, 2020. Consultation is ongoing. No BLM known Traditional Cultural Properties or Sacred Sites are located within the parcel. However, resources and locations of Native American religious and traditional concern may be present within the proposed parcels. The BLM will consult with Indian tribes on a government-to-government basis, if requested by any Tribe. Additional coordination and consultation would be initiated at the APD stage. BMPs, SOPs and site-specific mitigation may be applied at the APD stage as COAs.	Nicole Lohman 4/30/20
Wildlife			
NI	Migratory Birds	<p>The Migratory Bird Treaty Act (MBTA) protects migratory birds; Instructional Memorandum No. 2008-050 requires the BLM to address the potential effects of the projects on migratory bird populations and their habitat, and implement best management practices to avoid or minimize the possibility of impacts, through such measures as timing limitations during nesting seasons, surveys for bird nests, and monitoring (https://www.blm.gov/policy/im-2008-050).</p> <p>The Utah BLM has several lease notices that implement this policy during lease sales, ranging from those applied statewide (UT-LN-45: Migratory Birds, found in Appendix B of this document) to more narrow groups of taxa (see UT-LN-43 Raptors). In addition, several migratory birds have been designated as BLM Sensitive Species, and these may have additional protections through notices to potential buyers of potential for occurrence on a given parcel (see UT-LN-49).</p> <p>For the September 2020 lease sale, the BLM analysis of potential for occurrence indicated that application of the following lease notices was appropriate for every parcel in the sale, UT-LN-43 Raptors, and UT-LN-45: Migratory Birds.</p> <p>UT-LN-43 provides that raptor habitat exists in a given parcel, and that surveys will be required to identify any nesting birds. UT-LN-45 gives prospective buyers 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. Based on these surveys, buffers and timing limitations may be applied. In combination these lease notices provide mitigation measures which will mitigate impacts to migratory birds, by allowing the opportunity to make adjustments, such as design modifications, at the site-specific level when an Application for Permit to Drill is received.</p> <p>Parcel 016, 017 falls in the Utah's Bird Habitat Management Area.</p>	Dave Cook 5/1/2020
NI	Threatened, Endangered, Candidate or	The standard stipulations from the Competitive Leasing Handbook H-3120-1, Endangered Species Act (ESA), would be applied to all parcels.	Aaron Roe 05/01/2020.

Determination	Resource	Rationale for Determination	Parcel Reviewer
	Proposed Animal Species	<p>For all parcels with Federal surface ownership, applying the appropriate T&E Lease Notices developed through consultation with the USFWS are designed to mitigate potential impacts from mineral development on the identified lease parcels. Requirements outlined in the 2008 RPM, will adequately mitigate potential impacts at the leasing stage to Threatened, Endangered or Candidate (ESA) animal species.</p> <p>For each of the named species below, the 2008 RMP provided potential habitat information potential impacts from mineral development and expected effects once appropriate conservation measures identified in the applicable lease notice are applied. Additional consultation with USFWS will be required prior to the implementation of any project that ‘may affect’ a listed species or habitat. Additional conditions of approval may also be applied to areas of development at that time to ensure protection of ESA animal species and mitigation of potential project impacts</p> <p>The following lease notices and/or stipulation will be applied to the list parcels:</p> <p>T&E-03: Endangered Fish of the Upper Colorado River Drainage Basin: 030</p> <p>T&E-09: Utah Prairie Dog: 006, 007, 008, 009, 010, 012, 029</p> <p>T&E-11: California condor: 05</p> <p>T&E 27: Yellow-Billed Cuckoo: 008, 009, 011, 012, 018, 019, 020, 021, 022, 023, 024, 026, 030</p>	
NI	BLM Sensitive Wildlife Species	<p>The Federal Land Policy and Management Act of 1976, Section 102.8, requires environmental resources to be managed to provide food and habitat for fish and wildlife. The Sikes Act instructs agencies to develop, maintain, and coordinate programs for the conservation and rehabilitation of wildlife, fish and game (16 U.S.C. 670<i>et seq.</i>, section 670h). The DOI Manual 632 and BLM Manual 6840 requires conservation of special status species and the ecosystems upon which they depend on BLM-administered lands. Special status species are those listed or proposed for listing under the ESA, and species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA. Instructional Memorandum No. UT IM-2019-005 provides the plant and wildlife Species lists for BLM-administered public lands in Utah and these species have been evaluated for potential impacts from the proposed lease sale.</p> <p>Leasing of the proposed leases would not, by itself, authorize any ground disturbance; however, the proposed lease sale has the potential to impact habitat through future oil and gas development. Although site-specific effects cannot be analyzed until an exploration or development application is received, attachments of stipulations and notices to leases will assure the opportunity to make adjustments, such as design modifications, at the site specific level when an Application for Permit to Drill is received, to address specific wildlife resources.</p>	Dave Cook 5/1/2020

Determination	Resource	Rationale for Determination	Parcel Reviewer
		<p>Bald eagle UTSO 6-30 UT-LN-44 Raptors, UT-LN-45 Migratory Bird, UT-S-276 Controlled Surface Use/ Timing Limitations- Bald Eagle</p> <p>Burrowing owl UTSO 6-30 UT-LN-49 Sensitive Species</p> <p>Short-eared owl UTSO 6-30 UT-LN-49 Sensitive Species</p> <p>Ferruginous hawk UTSO 6-30 UT-LN-44 Raptors, UT-LN-45 Migratory Birds UT-LN-49 Sensitive Species</p> <p>Kit fox UTSO 18, 19 UT-LN-49 Sensitive Species</p> <p>Monarch Butterfly UTSO 6-30 UT-LN-156: Pollinators and Pollinator Habitat, UT-LN-49 Sensitive Species</p> <p>Western bumble bee UTSO 6-30 UT-LN-156: Pollinators and Pollinator Habitat, UT-LN-49 Sensitive Species</p>	
NI	Fish and Wildlife Excluding USFWS Designated Species	<p>Parcels were evaluated for state identified game species and other wildlife.</p> <p>Elk 012, 021, 022, 026 UT-S-233-Crucial Deer and Elk Winter Habitat</p> <p>Mule deer 006, 007, 008, 009, 010, 011, 012, 018, 019, 020, 021, 022, 023, 026, 029, 030, 031, 033 UT-S-233-Crucial Deer and Elk Winter Habitat</p>	Dave Cook 5/1/2020
Plants			
NI	BLM Sensitive Plant Species	<p>Specific parcels have been identified as having occurrence, or potential occurrence of several species of animals that may require modification of surface use plans to avoid disruptive or harmful activities. In addition, multiple parcels contained sensitive habitat for game species such as elk, mule deer or pronghorn antelope. Lease notices specified by parcel in Appendices A and D of this EA identify those species to make the operator aware of possible additional action. Justification for stipulations and lease notices applied by parcel is discussed in detail in Appendix D of this EA.</p> <p>Leasing of the proposed leases would not, by itself, authorize any ground disturbance; however, the proposed lease sale has the potential to impact habitat through future oil and gas development. Although site-specific effects cannot be analyzed until an exploration or development application is received, attachments of stipulations and notices to leases will assure the opportunity to make adjustments, such as design modifications, at the site specific level when an Application for Permit to Drill is received, to address specific wildlife and plant resources.</p> <p>Suitable habitat for Glenwood milkvetch (<i>Aragalus loanus</i>) has been identified in parcels 011, 012</p>	Aaron Roe 05/01/2020

Determination	Resource	Rationale for Determination	Parcel Reviewer
		<p>Suitable habitat for Ward’s penstemon (<i>Penstemon wardii</i>) has been identified in parcels 006, 007, 008, 009, 018, 019, 020</p> <p>Suitable habitat for Siguard townsendia (<i>Townsendia jonesii var lutea</i>) has been identified in parcels 006, 007, 008, 009</p> <p>Suitable habitat for Utah phacelia (<i>Phacelia utahensis</i>) has been identified in parcel 008</p> <p>Suitable habitat for Arapien blazingstar (<i>Mentzelia argillosa</i>) has been identified in parcel 008</p> <p>Suitable habitat for Greenwood’s goldenbush (<i>Ecameria lignumviridis</i>) has been identified in parcel 026</p> <p>Suitable habitat for Lost Creek Buckwheat (<i>Eriogonum mitophyllum</i>) has been identified in parcel 008</p> <p>The following lease notices and/or stipulation will be applied to parcels: 007, 008, 009, 011, 012, 018, 019, 020, 026</p> <p>UT-LN-49: Sensitive Species</p> <p>UT-LN-51: Special Status Plants: Not Federally Listed</p>	
NI	Threatened, Endangered, Candidate or Proposed Plant Species	<p>The standard stipulations from the Competitive Leasing Handbook H-3120-1, Endangered Species Act (ESA), would be applied to all parcels.</p> <p>For all parcels with Federal surface ownership, applying the appropriate T&E Lease Notices developed through consultation with the USFWS are designed to mitigate potential impacts from mineral development on the identified lease parcels. Requirements outlined in the 2008 RPM, will adequately mitigate potential impacts at the leasing stage to Threatened, Endangered or Candidate (ESA) animal species.</p> <p>For each of the named species below, the 2008 RMP provided potential habitat information potential impacts from mineral development and expected effects once appropriate conservation measures identified in the applicable lease notice are applied. Additional consultation with USFWS will be required prior to the implementation of any project that ‘may affect’ a listed species or habitat. Additional conditions of approval may also be applied to areas of development at that time to ensure protection of ESA plant species and mitigation of potential project impacts</p> <p>The following lease notices and/or stipulation will be applied to the list parcels:</p> <p>T&E-14: Last Chance Townsendia: 030</p> <p>T&E-17: San Rafael Cactus: 030</p> <p>T&E-29: Jones Cycladenia: 008, 021</p>	Aaron Roe 05/01/2020
NI	Invasive Species/Noxious Weeds	Executive Order 13112 requires Federal Agencies to promote activities in a manner which avoids introduction and spread of invasive species. Invasive species introduced to Utah affect plant and animal communities. Surface disturbing activities have the potential to introduce/spread invasive species/noxious weeds. Noxious weeds are invasive exotic	Brant Hallows 4/3/2020

Determination	Resource	Rationale for Determination	Parcel Reviewer
	(EO 13112)	<p>plants designated by the State of Utah as being hazardous to public health, the environment or the economy (Utah Code Title 4, Chapter 17).</p> <p>Noxious/invasive weed species are present or near to all of the subject parcels in Sanpete and Sevier counties. It is unknown if noxious weeds are present on parcel 030 near Emery county. The BLM coordinates with County and local governments to conduct an active program for control of invasive species. The lessee/operator is given notice that lands in this lease have been identified as containing or are near areas containing noxious weeds. Standard operating procedures such as washing of vehicles and annual monitoring and spraying along with site specific mitigation applied as conditions of approval (COA) at the APD stage should be sufficient to prevent the spread or introduction of Invasive, Non-native species. All disturbed areas and piles of top-soil should be reseeded with weed free seed the first fall after the disturbance is made to provide competition against weeds.</p> <p>Other 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 conditions of approval. Control measures would be implemented during any ground disturbing activity. Treatment will occur as part of regular operations, BMPs, SOPs and site-specific mitigation applied at the APD stage as COAs. These expectations are required for all parcels in the lease. Application of UT-LN-52 is warranted on all parcels. Negligible impacts would be expected as a result of leasing and exploration.</p>	
NI	Vegetation Excluding Special Status Species	<p>Vegetation resources will not be impacted to the degree that will require detailed analysis in this EA. This proposed sale and issuance of an oil and gas leases would not authorize any ground disturbances which could affect vegetation resources. Leasing is an administrative action that does not result in any surface disturbance. Site-specific effects cannot be analyzed until an exploration or development application is received, after leasing has occurred. There would be no impacts to vegetation resources through sale of leases. There is some expectation that exploration or development could occur, at which time additional NEPA would be conducted should an APD be filed. The applied lease stipulations and notices will notify buyers during sale of leases and allow for the opportunity to make adjustments at the site-specific level when an APD is received and will ensure impacts are addressed. Future development proposals on the leases would be subject to the standard lease terms, and all applicable laws, regulations and onshore orders in existence at the time of lease issuance. Additional detailed analysis in this EA is not necessary.</p>	Jeff Reese 04/08/2020
NI	Woodland / Forestry	<p>Scattered sparse woodlands exist in areas adjacent to all parcels included in the proposed lease sale, but not in quantities sufficient to establish public harvest areas. Exploration or development would not limit use or access to any established wood sale areas. BMPs, SOPs and site-specific mitigation may be applied at the APD stage as COAs. Per 43 CFR 5400 Sale of Forest Products, permits are required for severance and removal of forest products regardless of whether the product is utilized or not.</p>	Bob Bate 4/7/2020

Determination	Resource	Rationale for Determination	Parcel Reviewer
Water Resources			
NI	Water Resources/ Quality (drinking/ surface/ ground)	<p>Several parcels intersect drinking water protection zones. Impacts to water resources would be mitigated and detailed analysis is not required in this EA.</p> <p>Multiple water rights held by both BLM and individuals are located in or near the lease parcels. These water rights have beneficial uses of stockwater, irrigation, and domestic. Water quality must continue to be acceptable to meet the beneficial uses of the water right. Exploration and development could cause impacts.</p> <p>The following notice would be added to all parcels to inform potential lessees of the requirements of EO 11988: UT-LN-128: Federal Flood Risk Management Standard.</p> <p>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 (O.O.) No. 7 and the requirements for drilling operations contained in O.O No. 2. Potential fresh water aquifers zones would be protected by the requirement of casing and cementing the drill hole to total depth. The casing would be pressure tested to ensure integrity prior to drilling out the surface casing shoe plug.</p> <p>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 springs, 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).</p> <p>BMPs, SOPs and site specific mitigation may be applied at the APD stage as COAs.</p> <p><u>Stipulations</u> UT-S-78 on parcels 010, 011, 012, 018, 021, 022, 024, 025, and 027</p> <p><u>Notices</u> UT-LN-56, UT-LN-58, and UT-LN-91 on parcels 010, 011, 012, 018, 021, 022, 024, 025, and 027 UT-LN-57 on parcel 017</p>	Mark Dean 4/7/2020
NI	Wetlands/ Riparian Zones / Floodplains	<p>Through resource knowledge and/or GIS analysis of the National Wetlands Inventory layer, parcels identified below were identified as containing riparian and/or wetland systems. Floodplains (as defined in EO 11988) are also associated with these lentic and lotic systems on all parcels. However, since these parcels would have the following stipulations attached, impacts from exploration/development to those resources would be prevented.</p> <p><u>Stipulations</u> UT-S-111, and UT-S-121 on parcels 008, 009, 011, 018, and 022.</p>	Mark Dean 4/7/2020

Determination	Resource	Rationale for Determination	Parcel Reviewer
		<p><u>Notices</u> UT-LN-53 on Parcels 008, 009, 011, 018, and 022. UT-LN-128 on all parcels Leasing of parcels would not directly affect these resources. BMPs, SOPs, and site specific mitigation may be applied at the APD stage as COAs.</p>	
NI	Soils: Physical/ Biological	<p>At this stage (lease sale) there would be no impacts to soil resources. There is expectation that exploration or 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. It is expected that reclamation procedures would be required to ensure long-term soil impacts are minimized. Reclamation provisions/procedures would include re-vegetation (utilizing appropriate seed mix based on the ecological site, elevation and topography), re-contouring of the surface, road reclamation, noxious weed controls, etc. SOPs, BMPs and site specific design features applied at the APD stage including reclamation, may be applied as COAs.</p> <p><u>Stipulations</u> UT-S-102 to be applied on all parcels.</p>	Brant Hallows 4/3/2020
Rangeland Health			
NI	Farmlands (Prime or Unique)	Soil map units that are classified by the NRCS as prime or unique farmland may intersect these parcels. None of these would be irrigated due to exploration or development activities. These soils would not be utilized in agricultural practices while retained in BLM ownership. BMPs, SOPs and site specific mitigation may be applied at the APD stage as COAs.	Brant Hallows 4/3/2020
NI	Fuels/Fire Management	Exploration or development would not conflict with the Fire Management Plan goals and objectives. 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. BMPs, SOPs, and site specific mitigation may be applied at the APD stage as COAs.	Bob Bate 4/7/2020
NI	Livestock Grazing	Some of the parcels are located within livestock grazing allotments or private pastures. Leasing or production activities would not cause changes to grazing permit terms and conditions. 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	Jeff Reese 4/8/2020

Determination	Resource	Rationale for Determination	Parcel Reviewer
		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 or vegetation monitoring plots as per 43 CFR 3101.1-2. BMPs, SOPs and site specific mitigation may be applied at the APD stage as COAs.	
NP	Wild Horses and Burros	The parcels are not in or adjacent to Wild Horse and Burro Management areas.	Jeff Reese 4/8/2020
Lands and Minerals			
NI	Lands/Access	Leasing parcels would have no effect on property boundaries. In accordance with WO IM 2011-122, cadastral survey reviews and verifies the legal land descriptions prior to lease issuance. Stone monuments may be present and would need to be avoided the same as metal cap monuments. Detailed land surveys may be warranted at the APD stage. BMPs, SOPs and site specific mitigation may be applied at the APD stage as COAs.	Michael B. Utley 4/3/2020
NI	Geology / Mineral Resources/ Energy Production	<p>Oil and gas exploration could lead to an increased understanding of the geologic setting, as subsurface data obtained through lease operations may become public record. This information promotes an understanding of mineral resources as well as geologic interpretation. While conflicts could arise between oil and gas operations and other mineral operations, these could generally be mitigated under 43 CFR 3101.1-2 and under standard lease terms (Sec. 6) where siting and design of facilities may be modified to protect other resources.</p> <p>Depending on the success of oil and gas drilling, non-renewable natural gas and/or oil would be extracted and delivered to market. Production would result in the irretrievable loss of these resources. The RFDS is documented at section 2.2.1. The proposed action would not exceed the level of activity predicted in the RFDS.</p> <p>Any oil and gas development can be managed to avoid or work within other mineral resources. Mining claims and Mineral Materials were checked on April 3, 2020. Parcels 022 and 021 have mineral material sites located within the parcel boundary. Parcel 008 partially contains Plan of Operation UTU-71500. However, based on the lease parcel and location of the sites, there should not be any conflicts with the oil and gas lease sale.</p> <p>If the parcels are developed, wells within the parcels may be completed using hydraulic fracturing techniques. Additional information is provided in Appendix G. "FracFocus," is a database available to the public online at http://fracfocus.org/. Public has expressed concerns that:</p> <ul style="list-style-type: none"> • Spills during the management of hydraulic fracturing fluids and chemicals or produced water that result in large volumes or high concentrations of chemicals reaching groundwater resources; • Injection of hydraulic fracturing fluids into wells with inadequate mechanical integrity, allowing gases or liquids to move to groundwater resources; and, • Discharge of inadequately treated hydraulic fracturing wastewater to surface water resources. 	Devin McLemore 4/3/2020 Angela Wadman 5/7/2020

Determination	Resource	Rationale for Determination	Parcel Reviewer
		<p>Before operators or service companies preform hydraulic fracturing treatment, a series of tests are preformed to ensure well, casing, and well equipment are in proper order and will safely withstand the application of the fracture treatment pressures and flow rates. Operators must comply with O.O. #2 and O.O. # 7. If fracking should occur in an area where there is no vertical separation between the hydraulically fractured rock formation and the bottom of the potential underground drinking water source, fracking fluid may be introduced into the source.</p> <p>The majority of flow back water from hydraulic fracturing in Utah is recycled and used in future hydraulic fracturing completions. Therefore, the underground injection of hydraulic fracturing flow back in Utah is very limited and presents little potential for inducing seismic activity. In fact, there has been no reported induced seismicity in Utah that was from water injected into Class II wells. Oil and gas wells produce a great amount of wastewater. The majority this water has high salt brine content and must be disposed of in an environmentally safe manner. In Utah, a majority (95%) of this produced water is pumped into Class II injection wells. In certain parts of the country, water injection has caused some induced seismicity in the form of small earthquakes. Two major factors play a role in induced seismicity from water injection. First, the amount of water being injected. Secondly, the local geology of the water injection site. In Utah, the volumes are lower than those states experiencing induced seismicity. Also, the geology is different than those states experiencing induced seismicity. The injection zones are stratigraphically thousands of feet above the basement rock that may contain large unknown faults. Therefore, at this time it appears that induced seismicity from water injection is not a problem in the oil fields of Utah. (Personal communication from John Rogers, Utah Division of Oil, Gas and Mining (UDOGM), March 27, 2018).</p> <p>In conclusion, there would be no negative affects to mineral resources.</p>	
NI	Paleontology	<p>There are no known paleontological resources within the parcels. If an APD is filed, specific clearances would be conducted and incorporated into that NEPA process. If paleontological resources are located, the AO would be contacted. BMPs, SOPs and site specific mitigation may be applied at the APD stage as COAs.</p> <p><u>Notices</u> UT-LN-72 High Potential Paleontological Resources on parcels 6, 7, 18, 19, 20, 28, 29</p>	Sam Marolt 4/6/2020
NI	Wastes (hazardous or solid)	<p>Hazardous materials are not known to exist on the parcels. Refer also to the Air Quality discussion for specific information on hazardous air pollutants (HAPs). Hazardous materials, if not handled properly that are associated with operations, have the potential to be spilled at the lease/drill site. However, the spill would be contained, reported, and cleaned up by the operator. BMPs, SOPs and site specific mitigation may be applied at the APD stage as COAs.</p>	Devin McLemore 4/7/2020

**Green River District
Price Field Office**

Determination	Resource	Rationale for Determination	Parcel Reviewer
Resources And Issues Considered (Includes Supplemental Authorities Appendix 1 H-1790-1)			
Recreation			
NI	Areas of Critical Environmental Concern	The parcels do not intersect any designated ACECs. They do intersect the proposed Mussentuchit ACEC that was nominated for consideration in the 2008 Price Field Office RMP. The relevant and important values of the proposed ACEC were Cultural due to the presence of quarries used by prehistoric economies.	Sheri Wysong 5/14/2020.
NI	National Historic Trails/ Wilderness Study Area	The parcel do not intersect any designated National Historic Trails or Wilderness Study Areas. However, parcels 31 and 33 are within two miles of the Old Spanish Trail 031 and 033 LN 65 Old Spanish Trail	Sheri Wysong 5/15/2020
NI	Recreation	The parcels do not intersect any SRMAs or other recreation designations.	Sheri Wysong 5/15/2020
NI	Travel/ Transportation	An operator/lessee must state the routes it intends to use to access a drill site when submitting an APD. It is possible the potential lessee would propose to access the parcels via the Hartnet-Cathedral Road Class B road in Wayne County, a road claimed by Wayne County as an RS 2477 Right-of-Way. The road crosses into the northeast corner of the CNP. The County's claim has not been adjudicated and the NPS would likely object to commercial use of it through CRNP. However, the logistics of accessing the parcels from this route rather than the Class B Last Chance Loop Route through Emery County makes it unlikely the operator would propose the Hartnet Cathedral Road. A Lease Notice is attached to the parcels stating that the BLM does not guarantee access to the parcels from the south across Park Service lands UT-LN-79 NPS Roads on parcel 034	Sheri Wysong May 13, 2020
NI	Visual Resources	The area encompassed by parcel 034 rates high for scenic quality, but is managed for VRM III. Development could lead to the degradation of some scenic quality, but since there would be no anticipated oil extraction from the parcels, the visual disturbances could be minimized.	Sheri Wysong May 13, 2020
NP	Wild and Scenic Rivers	No WSR are in the vicinity of the parcels. Wild and Scenic Rivers are not present.	Sheri Wysong May 13, 2020
PI	Sensitive Areas - Units of the National Park	Parcel 034 is within five miles of a corner of Capitol Reef National Park and adjacent to the Lower Last Chance Wilderness Area that was designated in Subtitle C part II of the John D. Dingell, Jr. Conservation, Management and Recreation Act. Section 1232(e) of the Act states:	Sheri Wysong May 13, 2020

Determination	Resource	Rationale for Determination	Parcel Reviewer
	Service and Wilderness Areas	<p>(1) IN GENERAL.—Congress does not intend for the designation of the wilderness areas to create protective perimeters or buffer zones around the wilderness areas.</p> <p>(2) NONWILDERNESS ACTIVITIES.—The fact that non-wilderness activities or uses can be seen or heard from areas within a wilderness area shall not preclude the conduct of those activities or uses outside the boundary of the wilderness area. (United States Congress, 2019) (2019, p. 121)</p> <p>Parcel 034 –LN-98 <i>Natural Soundscapes</i> LN 125 <i>Light Pollution (Night Skies)</i>, UT-LN-162 -<i>Highly Valued Landscapes and Scenic Settings</i>, UT-LN 163 <i>Notification of the National Park Service</i></p>	
NP	Lands with wilderness characteristics	<p>No lands with wilderness characteristics outside the recently designated wilderness areas.</p> <p>Lands with wilderness characteristics are not present.</p>	<p>Sheri Wysong May 13, 2020</p>
Cultural			
NI	Cultural Resources	<p>BLM Archaeologists compiled cultural resource data from the Price Field Office cultural resource library, GIS data (CURES), the Utah Department of Heritage and Arts Archaeological Records Database (UDAM) and the Preservation Pro database. These data sources contain information on all of the recorded cultural resource sites and cultural resource surveys conducted within and adjacent to the proposed lease parcels.</p> <p>The BLM has drafted a cultural resources report for the remaining parcels included in the September 2020 sale. Once complete, the report will be sent for Tribal and Consulting Party review before submission to the Utah SHPO for review and concurrence on the finding of effect.</p> <p>BLM Archaeologists at the Field and State Office level reviewed this data against the lease sale parcel locations to determine if oil and gas development could occur in accordance with the appropriate Reasonably Foreseeable Development Scenario for each parcel, without incurring adverse effects to historic properties, taking into consideration impacts to cultural resources as well. The parcels were also reviewed for the application of stipulations and lease notices as required by the Price Field Office Resource Management Plan.</p> <p>For future undertakings related to this lease sale, the BLM will not approve any ground disturbing activities until it completes it’s obligations to consider cultural resources under the NEPA, the NHPA, and other authorities specific to those future undertakings. Consideration of impacts to cultural resources and potential adverse effects to historic properties will be taken into account during the review stage of site-specific development plans.</p> <p>The Cultural Resource Stipulation as required by Handbook H-3120-1 applies to all parcels.</p>	<p>Nicole Lohman 4/30/20</p>

Determination	Resource	Rationale for Determination	Parcel Reviewer
NI	Native American Religious Concerns	Native American Tribes were contacted via Certified Letter on April 3, 2020. Consultation is ongoing. No BLM known Traditional Cultural Properties or Sacred Sites are located within the parcel. However, resources and locations of Native American religious and traditional concern may be present within the proposed parcels. The BLM will consult with Indian tribes on a government-to-government basis, if requested by any Tribe. Additional coordination and consultation would be initiated at the APD stage. BMPs, SOPs and site-specific mitigation may be applied at the APD stage as COAs.	Nicole Lohman 4/30/20
Wildlife			
NI	Migratory Birds	<p>The Migratory Bird Treaty Act (MBTA) protects migratory birds; Instructional Memorandum No. 2008-050 requires the BLM to address the potential effects of the projects on migratory bird populations and their habitat, and implement best management practices to avoid or minimize the possibility of impacts, through such measures as timing limitations during nesting seasons, surveys for bird nests, and monitoring (https://www.blm.gov/policy/im-2008-050).</p> <p>The Utah BLM has several lease notices that implement this policy during lease sales, ranging from those applied statewide (UT-LN-45: Migratory Birds, found in Appendix B of this document) to more narrow groups of taxa (see UT-LN-43 Raptors). In addition, several migratory birds have been designated as BLM Sensitive Species, and these may have additional protections through notices to potential buyers of potential for occurrence on a given parcel (see UT-LN-49).</p> <p>For the September 2020 lease sale, the BLM analysis of potential for occurrence indicated that application of the following lease notices was appropriate for every parcel in the sale, UT-LN-43 Raptors, and UT-LN-45: Migratory Birds.</p> <p>UT-LN-43 provides that raptor habitat exists in a given parcel, and that surveys will be required to identify any nesting birds. UT-LN-45 gives prospective buyers 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. Based on these surveys, buffers and timing limitations may be applied. In combination these lease notices provide mitigation measures which will mitigate impacts to migratory birds, by allowing the opportunity to make adjustments, such as design modifications, at the site-specific level when an Application for Permit to Drill is received.</p>	Dave Cook 4/29/2020
NI	Threatened, Endangered, Candidate or Proposed Animal Species	<p>The standard stipulations from the Competitive Leasing Handbook H-3120-1, Endangered Species Act (ESA), would be applied to all parcels.</p> <p>For all parcels with Federal surface ownership, applying the appropriate T&E Lease Notices developed through consultation with the USFWS are designed to mitigate potential impacts from mineral development on the identified lease parcels.</p>	Aaron Roe 4/30/2020.

Determination	Resource	Rationale for Determination	Parcel Reviewer
		<p>Requirements outlined in the 2008 RPM, will adequately mitigate potential impacts at the leasing stage to Threatened, Endangered or Candidate (ESA) animal species.</p> <p>For each of the named species below, the 2008 Price RMP provided potential habitat information potential impacts from mineral development and expected effects once appropriate conservation measures identified in the applicable lease notice are applied. Additional consultation with USFWS will be required prior to the implementation of any project that ‘may affect’ a listed species or habitat. Additional conditions of approval may also be applied to areas of development at that time to ensure protection of ESA animal species and mitigation of potential project impacts</p> <p>The following lease notices and/or stipulation will be applied to the list parcels: T&E-03: Endangered Fish of the Upper Colorado River Drainage Basin: all T&E-06: Mexican Spotted Owl: 033, 034 T&E-11: California condor: 034 T&E 27: Yellow-Billed Cuckoo: 031, 033</p>	
NI	BLM Sensitive Wildlife Species	<p>The Federal Land Policy and Management Act of 1976, Section 102.8, requires environmental resources to be managed to provide food and habitat for fish and wildlife. The Sikes Act instructs agencies to develop, maintain, and coordinate programs for the conservation and rehabilitation of wildlife, fish and game (16 U.S.C. 670<i>et seq.</i>, section 670h). The DOI Manual 632 and BLM Manual 6840 requires conservation of special status species and the ecosystems upon which they depend on BLM-administered lands. Special status species are those listed or proposed for listing under the ESA, and species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA. Instructional Memorandum No. UT IM-2019-005 provides the wildlife Species lists for BLM-administered public lands in Utah and these species have been evaluated for potential impacts from the proposed lease sale.</p> <p>Specific parcels have been identified as having occurrence, or potential occurrence of several species of animals that may require modification of surface use plans to avoid disruptive or harmful activities. Leasing of the proposed leases would not, by itself, authorize any ground disturbance; however, the proposed lease sale has the potential to impact habitat through future oil and gas development. Although site-specific effects cannot be analyzed until an exploration or development application is received, attachments of stipulations and notices to leases will assure the opportunity to make adjustments, such as design modifications, at the site specific level when an Application for Permit to Drill is received, to address specific wildlife resources.</p> <p>Great plains toad 031, 033, 044 UT-LN-49 Sensitive Species Burrowing owl 031, 033, 044 UT-LN-49 Sensitive Species</p>	Dave Cook 5/1/2020

Determination	Resource	Rationale for Determination	Parcel Reviewer
		<p>Ferruginous hawk 031, 033, 044 UT-LN-44: Raptors, UT-LN-45: Migratory Bird, UT-LN-49: Utah Sensitive Species, UT-S-260: TL – Raptor Habitat, UT-S-285 Migratory Bird Nesting Golden eagle 031, 033, 044 UT-LN-44: Raptors, UT-LN-45: Migratory Bird, UT-LN-49: Utah Sensitive Species, UT-S-260: TL – Raptor Habitat, UT-S-285 Migratory Bird Nesting Fringed myotis 031, 033, 044 UT-LN-44 UT-LN-49: Utah Sensitive Species Kit fox 031, 033, 044 UT-LN-44 UT-LN-49: Utah Sensitive Species Spotted bat 031, 033, 044 UT-LN-44 UT-LN-49: Utah Sensitive Species Townsend’s big-eared bat 031, 033, 044 UT-LN-44 UT-LN-49: Utah Sensitive Species Western red bat 031, 033, 044 UT-LN-44 UT-LN-49: Utah Sensitive Species White-tailed prairie dog 031, 033 UT-LN-25 UT-LN-49 Sensitive Species, UT-LN-25 White-Tailed Prairie Dog Monarch Butterfly 031, 033 UT-LN-49 Sensitive Species, UT-LN-156 Pollinators and Pollinator Habitat Western bumble bee 031, 033 UT-LN-49 Sensitive Species, UT-LN-156 Pollinators and Pollinator Habitat</p>	
NI	Fish and Wildlife Excluding USFWS Designated Species	<p>Parcels were evaluated for state identified game species, including the American bison, cougar, black bear, moose, Rocky Mountain elk, mule deer, pronghorn antelope, mountain goat, California bighorn sheep, desert bighorn sheep, Rocky Mountain bighorn sheep, snowshoe hare, wild turkey, chukar, California quail, Gambel’s quail, band-tailed pigeon, dusky/blue grouse, sharp-tailed grouse, ruffed grouse, white-tailed ptarmigan and ring-necked pheasant using UDWR data. Habitat suitable for those not listed below is not expected to occur. Ring-necked pheasant: 031, 033 Black bear: 031, 033 Elk 031, 034, UT-S-232: TL Mule Deer and Elk Crucial Winter Range Mule deer 022 UT-S-232: TL Mule Deer and Elk Crucial Winter Range Pronghorn 033,034</p>	Dave Cook 4/30/2020
Plants			

Determination	Resource	Rationale for Determination	Parcel Reviewer
NI	BLM Sensitive Plant Species	<p>Specific parcels have been identified as having occurrence, or potential occurrence of several species of animals that may require modification of surface use plans to avoid disruptive or harmful activities. In addition, multiple parcels contained sensitive habitat for game species such as elk, mule deer or pronghorn antelope. Lease notices specified by parcel in Appendices A and D of this EA identify those species to make the operator aware of possible additional action. Justification for stipulations and lease notices applied by parcel is discussed in detail in Appendix D of this EA.</p> <p>Leasing of the proposed leases would not, by itself, authorize any ground disturbance; however, the proposed lease sale has the potential to impact habitat through future oil and gas development. Although site-specific effects cannot be analyzed until an exploration or development application is received, attachments of stipulations and notices to leases will assure the opportunity to make adjustments, such as design modifications, at the site specific level when an Application for Permit to Drill is received, to address specific wildlife and plant resources.</p> <p>Suitable habitat for Creutzfeldt flower (<i>Cryptantha creutzfeldtii</i>) has been identified in parcels 31, 32, and 33. Suitable habitat for Mussentuchit gilia (<i>Aliciella tenuis</i>) has been identified in parcel 34 Suitable habitat for Psoralea globemallow (<i>Sphaeralcea psoraloides</i>) has been identified in parcels 33 and 34</p> <p>The following lease notices and/or stipulation will be applied to all parcels UT-LN-49: Sensitive Species UT-LN-51: Special Status Plants: Not Federally Listed</p>	Aaron Roe 05/01/2020.
NI	Threatened, Endangered, Candidate or Proposed Plant Species	<p>The standard stipulations from the Competitive Leasing Handbook H-3120-1, Endangered Species Act (ESA), would be applied to all parcels.</p> <p>For all parcels with Federal surface ownership, applying the appropriate T&E Lease Notices developed through consultation with the USFWS are designed to mitigate potential impacts from mineral development on the identified lease parcels. Requirements outlined in the 2008 RPM, will adequately mitigate potential impacts at the leasing stage to Threatened, Endangered or Candidate (ESA) plant species.</p> <p>For each of the named species below, the 2008 Price RMP provided potential habitat information potential impacts from mineral development and expected effects once appropriate conservation measures identified in the applicable lease notice are applied. Additional consultation with USFWS will be required prior to the implementation of any project that ‘may affect’ a listed species or habitat. Additional conditions of approval may also be applied to areas of development at that time to ensure protection of ESA animal species and mitigation of potential project impacts</p> <p>The following lease notices and/or stipulation will be applied to the list parcels:</p>	Aaron Roe 4/30/2020

Determination	Resource	Rationale for Determination	Parcel Reviewer
		<p>T&E 05: Listed Plant Species: all parcels T&E 13: Barneby Reed Mustard: 034 T&E 14: Last Chance Townsendia: all parcels T&E 15: Wright Fishhook Cactus: 033, 034 T&E 16: Winkler Pincushion Cactus: 034 T&E 17: San Rafael Cactus: all parcels T&E 19: Jones Cycladenia: 034</p>	
NI	<p>Invasive Species/Noxious Weeds (EO 13112)</p>	<p>Executive Order 13112 requires Federal Agencies to promote activities in a manner which avoids introduction of spread of invasive species. Invasive species introduced to Utah affect plant and animal communities Surface disturbing activities have the potential to introduce/spread invasive species/noxious weeds. The BLM “Partners Against Weeds, An Action Plan for the Bureau of Land Management” provides strategies to prevent and control spread of noxious weeds Invalid source specified. Noxious weeds are invasive exotic plants designated by the State of Utah as being hazardous to public health, the environment or the economy (Utah Code Title 4, Chapter 17).</p> <p>Noxious/invasive weed species may be present on the subject parcels. The BLM coordinates with County and local governments to conduct an active program for control of invasive species. The lessee/operator is given notice that lands in this lease have been identified as containing or are near areas containing noxious weeds. Standard operating procedures such as washing of vehicles and annual monitoring and spraying along with site specific mitigation applied as conditions of approval (COA) at the APD stage should be sufficient to prevent the spread or introduction of Invasive, Non-native species. All disturbed areas and piles of top-soil should be reseeded with certified weed free seed the first fall after the disturbance is made to provide competition against weeds.</p> <p>Other 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 conditions of approval. Control measures would be implemented during any ground disturbing activity. Treatment will occur as part of regular operations, BMPs, SOPs and site-specific mitigation applied at the APD stage as COAs. These expectations are required for all parcels in the lease. Application of UT-S-305 and UT-LN-52 is warranted on all parcels. Negligible impacts would be expected as a result of leasing and exploration.</p> <p><u>Stipulations</u> UT-S-305 on all parcels.</p> <p><u>Notices</u></p>	<p>Stephanie Bauer 4/6/20</p>

Determination	Resource	Rationale for Determination	Parcel Reviewer
		UT-LN-52 on all parcels.	
NI	Vegetation Excluding Special Status Species	Vegetation resources will not be impacted to the degree that will require detailed analysis in this EA. This proposed sale and issuance of an oil and gas leases would not authorize any ground disturbances which could affect vegetation resources. Leasing is an administrative action that does not result in any surface disturbance. Site-specific effects cannot be analyzed until an exploration or development application is received, after leasing has occurred. There would be no impacts to vegetation resources through sale of leases. There is some expectation that exploration or development could occur, at which time additional NEPA would be conducted should an APD be filed. The applied lease stipulations and notices will notify buyers during sale of leases and allow for the opportunity to make adjustments at the site-specific level when an APD is received and will ensure impacts are addressed. Future development proposals on the leases would be subject to the standard lease terms, and all applicable laws, regulations and onshore orders in existence at the time of lease issuance. Additional detailed analysis in this EA is not necessary.	Stephanie Bauer 4/6/20
NP	Woodland / Forestry	Scattered sparse woodlands exist in areas adjacent to all parcels included in the proposed lease sale, but not in quantities sufficient to establish public harvest areas. Exploration or development would not limit use or access to any established wood sale areas. BMPs, SOPs and site-specific mitigation may be applied at the APD stage as COAs. Per 43 CFR 5400 Sale of Forest Products, permits are required for severance and removal of forest products regardless of whether the product is utilized or not.	Stephanie Bauer 4/6/20
Water Resources			
NI	Water Resources/ Quality (drinking/ surface/ ground)	<p>There are no identified ground or surface drinking water protection zones in the area of the lease parcels.</p> <p>Multiple water rights held by both BLM and individuals are located in or near the lease parcels. These water rights have beneficial uses of stockwater, irrigation, and domestic. Water quality must continue to be acceptable to meet the beneficial uses of the water right. Exploration and development could cause impacts.</p> <p>The following notice would be added to all parcels to inform potential lessees of the requirements of EO 11988: UT-LN-128: Federal Flood Risk Management Standard.</p> <p>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 (O.O.) No. 7 and the requirements for drilling operations contained in O.O No. 2. Potential fresh water aquifers zones would be protected by the requirement of casing and cementing the drill hole to total depth. The casing would be pressure tested to ensure integrity prior to drilling out the surface casing shoe plug.</p>	<p>Rebecca Anderson 4/7/2020</p> <p>Jared Dalebout 5/5/2020</p>

Determination	Resource	Rationale for Determination	Parcel Reviewer
		<p>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 springs, 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). BMPs, SOPs and site specific mitigation may be applied at the APD stage as COAs.</p> <p><u>Stipulations</u> UT-S-127 on all parcels</p>	
NI	Wetlands/ Riparian Zones / Floodplains	<p>Through resource knowledge and/or GIS analysis of the National Wetlands Inventory layer, parcel 33 was identified as containing riparian and/or wetland systems. Floodplains (as defined in EO 11988) are associated with intermittent or perennial streams on all parcels. However, since these parcels would have the following stipulations attached, impacts from exploration/development to those resources would be prevented.</p> <p>Leasing of parcels would not directly affect these resources. BMPs, SOPs, and site specific mitigation may be applied at the APD stage as COAs.</p> <p><u>Stipulations</u> UT-S-127 on all parcels UT-S-53 on all parcel 33</p> <p><u>Notices</u> UT-LN-128 on all parcels</p>	Jerrad Goodell 4/7/2020
NI	Soils: Physical/Biological	<p>At this stage (lease sale) there would be no impacts to soil resources. There is some expectation that exploration or 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 erosion or degradation, these would be developed at the time of the site specific NEPA. It is expected that reclamation procedures would be required to ensure long-term soil impacts are minimized. Reclamation provisions/procedures would include re-vegetation (utilizing appropriate seed mix based on the ecological site, elevation and topography), road reclamation, noxious weed controls, etc. to prevent soil erosion. The parcels contain steep topography; erosion control features will be addressed in site specific NEPA. SOPs, BMPs and site specific design features applied at the APD stage including reclamation, may be applied as COAs.</p> <p><u>Stipulations</u> UT-S-97 on all parcels. UT-S-101 on all parcels.</p>	Stephanie Bauer 4/6/20

Determination	Resource	Rationale for Determination	Parcel Reviewer
		<u>Notices</u> UT-LN-60 on all parcels. UT-LN-61 on all parcels.	
Rangeland Health			
NI	Farmlands (Prime or Unique)	Soil map units that are classified by the NRCS as farmland may intersect these parcels. None of these would be irrigated due to exploration or development activities. These soils would not be utilized in agricultural practices while retained in BLM ownership. BMPs, SOPs and site specific mitigation may be applied at the APD stage as COAs. <u>Notices</u> UT-LN-121 on parcels 031, 033.	Stephanie Bauer 4/6/20
NI	Fuels/Fire Management	Exploration or development would not conflict with the Fire Management Plan goals and objectives. 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. BMPs, SOPs, and site specific mitigation may be applied at the APD stage as COAs. Follow any seasonal fire restrictions at utahfireinfo.gov	Stuart Bedke 4/9/2020
NI	Livestock Grazing	Some of the parcels are located within livestock grazing allotments or private pastures. Leasing or production activities would not cause changes to grazing permit terms and conditions. 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 or vegetation monitoring plots as per 43 CFR 3101.1-2. BMPs, SOPs and site specific mitigation may be applied at the APD stage as COAs.	Stephanie Bauer 4/6/20
NP	Wild Horses and Burros	The parcels do not intersect herd areas or herd management areas.	Mike Tweddell 4/6/2020
Lands and Minerals			
NI	Lands/Access	Leasing parcels would have no effect on property boundaries. In accordance with WO IM 2011-122, cadastral survey reviews and verifies the legal land descriptions prior to lease issuance. Stone monuments may be present and would need	Veronica Kratman

Determination	Resource	Rationale for Determination	Parcel Reviewer
		to be avoided the same as metal cap monuments. Detailed land surveys may be warranted at the APD stage. BMPs, SOPs and site specific mitigation may be applied at the APD stage as COAs.	4/6/2020
NI	Geology / Mineral Resources/ Energy Production	<p>Oil and gas exploration could lead to an increased understanding of the geologic setting, as subsurface data obtained through lease operations may become public record. This information promotes an understanding of mineral resources as well as geologic interpretation. While conflicts could arise between oil and gas operations and other mineral operations, these could generally be mitigated under 43 CFR 3101.1-2 and under standard lease terms (Sec. 6) where siting and design of facilities may be modified to protect other resources.</p> <p>Depending on the success of oil and gas drilling, non-renewable natural gas and/or oil would be extracted and delivered to market. Production would result in the irretrievable loss of these resources. The RFDS is documented at section 2.2.1. The proposed action would not exceed the level of activity predicted in the RFDS.</p> <p>Any oil and gas development can be managed to avoid or work within other mineral resources. Mining claims and Mineral Materials were checked on 4/7/2020. No active placer claims or Mineral Material sites were found to be associated within any parcel.</p> <p>If the parcels are developed, wells within the parcels may be completed using hydraulic fracturing techniques. Additional information is provided in Appendix G “FracFocus,” is a database available to the public online at http://fracfocus.org/. Public has expressed concerns that:</p> <ul style="list-style-type: none"> • Spills during the management of hydraulic fracturing fluids and chemicals or produced water that result in large volumes or high concentrations of chemicals reaching groundwater resources; • Injection of hydraulic fracturing fluids into wells with inadequate mechanical integrity, allowing gases or liquids to move to groundwater resources; and, • Discharge of inadequately treated hydraulic fracturing wastewater to surface water resources. <p>Before operators or service companies preform hydraulic fracturing treatment, a series of tests are preformed to ensure well, casing, and well equipment are in proper order and will safely withstand the application of the fracture treatment pressures and flow rates. Operators must comply with O.O. #2 and O.O. # 7. If fracking should occur in an area where there is no vertical separation between the hydraulically fractured rock formation and the bottom of the potential underground drinking water source, fracking fluid may be introduced into the source.</p> <p>The majority of flow back water from hydraulic fracturing in Utah is recycled and used in future hydraulic fracturing completions. Therefore, the underground injection of hydraulic fracturing flow back in Utah is very limited and presents little potential for inducing seismic activity. In fact, there has been no reported induced seismicity in Utah that was from water injected into Class II wells. Oil and gas wells produce a great amount of wastewater. The majority this water has high salt brine content and must be disposed of in an environmentally safe manner. In Utah, a majority (95%) of this produced water is pumped into Class II injection wells. In certain parts of the country, water injection has caused some induced seismicity in the form of small earthquakes. Two major factors play a role in induced seismicity from water</p>	<p>Rebecca Anderson 4/7/2020 Angela Wadman 5/7/2020</p>

Determination	Resource	Rationale for Determination	Parcel Reviewer
		<p>injection. First, the amount of water being injected. Secondly, the local geology of the water injection site. In Utah, the volumes are lower than those states experiencing induced seismicity. Also, the geology is different than those states experiencing induced seismicity. The injection zones are stratigraphically thousands of feet above the basement rock that may contain large unknown faults. Therefore, at this time it appears that induced seismicity from water injection is not a problem in the oil fields of Utah. (Personal communication from John Rogers, Utah Division of Oil, Gas and Mining (UDOGM), March 27, 2018).</p> <p>In conclusion, there would be no negative affects to mineral resources. No Lease Stipulation and notices would need to be applied to all parcels. Lease stipulations and notices are created to mitigate impacts of oil and gas development on other resources.</p>	
NP	Paleontology	There are no known paleontological resources within the parcels. If an APD is filed, specific clearances would be conducted and incorporated into that NEPA process. If paleontological resources are located, the AO would be contacted. BMPs, SOPs and site specific mitigation may be applied at the APD stage as COAs.	Rebecca Anderson 4/7/2020
NI	Wastes (hazardous or solid)	Hazardous materials are not known to exist on the parcels. Refer also to the Air Quality discussion for specific information on hazardous air pollutants (HAPs). Hazardous materials, if not handled properly that are associated with operations, have the potential to be spilled at the lease/drill site. However, the spill would be contained, reported, and cleaned up by the operator. BMPs, SOPs and site specific mitigation may be applied at the APD stage as COAs.	Marc Johnson 4/6/2020

Vernal Field Office

Determination	Resource	Rationale for Determination	Parcel Reviewer
Resources And Issues Considered (Includes Supplemental Authorities Appendix 1 H-1790-1)			
Recreation			
NP	Areas of Critical Environmental Concern	There are no ACECs in the vicinity of the parcels	Sheri Wysong May 13, 2020
NP	National Historic Trails	There are no National Historic Trails in the vicinity of the parcels	Sheri Wysong May 13, 2020
NI	Recreation	Dispersed recreation may occur on the parcels, but there are no specific sites on the parcels that are of particular importance to recreationalists.	Sheri Wysong May 13, 2020

Determination	Resource	Rationale for Determination	Parcel Reviewer
NP	Travel/ Transportation	No scenic highways are in the vicinity of the parcels.	Sheri Wysong May 13, 2020
NI	Visual Resources	The parcels are managed as Class III and Class IV VRM. These classifications are compatible with oil and gas development.	Sheri Wysong May 13, 2020
NP	Wild and Scenic Rivers	No Wild and Scenic Rivers are in the vicinity of the parcels	Sheri Wysong May 13, 2020
NP	Wilderness/Wilderness Study Area	No Wilderness Areas or WSAs are in the vicinity of the parcels	Sheri Wysong May 13, 2020
NP	Lands with wilderness characteristics	No Lands with Wilderness Characteristic are in the vicinity of the parcels.	Sheri Wysong May 13, 2020
Cultural			
NI	Cultural Resources	<p>BLM Archaeologists compiled cultural resource data from the Vernal Field Office cultural resource library, GIS data (CURES), the Utah Department of Heritage and Arts Archaeological Records Database (UDAM) and the Preservation Pro database. These data sources contain information on all of the recorded cultural resource sites and cultural resource surveys conducted within and adjacent to the proposed lease parcels.</p> <p>The BLM has drafted a cultural resources report for the remaining parcels included in the September 2020 sale. Once complete, the report will be sent for Tribal and Consulting Party review before submission to the Utah SHPO for review and concurrence on the finding of effect.</p> <p>BLM Archaeologists at the Field and State Office level reviewed this data against the lease sale parcel locations to determine if oil and gas development could occur in accordance with the appropriate Reasonably Foreseeable Development Scenario for each parcel, without incurring adverse effects to historic properties, taking into consideration impacts to cultural resources as well. The parcels were also reviewed for the application of stipulations and lease notices as required by the Vernal Field Office Resource Management Plan.</p> <p>For future undertakings related to this lease sale, the BLM will not approve any ground disturbing activities until it completes it's obligations to consider cultural resources under the NEPA, the NHPA, and other authorities specific to those future undertakings. Consideration of impacts to cultural resources and potential adverse effects to historic properties will be taken into account during the review stage of site-specific development plans.</p>	Nicole Lohman 4/30/20

Determination	Resource	Rationale for Determination	Parcel Reviewer
		The Cultural Resource Stipulation as required by Handbook H-3120-1 applies to all parcels.	
NI	Native American Religious Concerns	Native American Tribes were contacted via Certified Letter on April 3, 2020. Consultation is ongoing. No BLM known Traditional Cultural Properties or Sacred Sites are located within the parcel. However, resources and locations of Native American religious and traditional concern may be present within the proposed parcels. The BLM will consult with Indian tribes on a government-to-government basis, if requested by any Tribe. Additional coordination and consultation would be initiated at the APD stage. BMPs, SOPs and site-specific mitigation may be applied at the APD stage as COAs.	Nicole Lohman 4/30/20
Wildlife			
NI	Migratory Birds	<p>The Migratory Bird Treaty Act (MBTA) protects migratory birds; Instructional Memorandum No. 2008-050 requires the BLM to address the potential effects of the projects on migratory bird populations and their habitat, and implement best management practices to avoid or minimize the possibility of impacts, through such measures as timing limitations during nesting seasons, surveys for bird nests, and monitoring (https://www.blm.gov/policy/im-2008-050).</p> <p>The Utah BLM has several lease notices that implement this policy during lease sales, ranging from those applied statewide (UT-LN-45: Migratory Birds, found in Appendix B of this document) to more narrow groups of taxa (see UT-LN-43 Raptors). In addition, several migratory birds have been designated as BLM Sensitive Species, and these may have additional protections through notices to potential buyers of potential for occurrence on a given parcel (see UT-LN-49).</p> <p>For the September 2020 lease sale, the BLM analysis of potential for occurrence indicated that application of the following lease notices was appropriate for every parcel in the sale, UT-LN-43 Raptors, and UT-LN-45: Migratory Birds.</p> <p>UT-LN-43 provides that raptor habitat exists in a given parcel, and that surveys will be required to identify any nesting birds. UT-LN-45 gives prospective buyers 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. Based on these surveys, buffers and timing limitations may be applied. In combination these lease notices provide mitigation measures which will mitigate impacts to migratory birds, by allowing the opportunity to make adjustments, such as design modifications, at the site-specific level when an Application for Permit to Drill is received.</p>	Dave Cook 5/1/2020
NI	Threatened, Endangered, Candidate or	The standard stipulations from the Competitive Leasing Handbook H-3120-1, Endangered Species Act (ESA), would be applied to all parcels.	Aaron Roe 5/1/2020

Determination	Resource	Rationale for Determination	Parcel Reviewer
	Proposed Animal Species	<p>For all parcels with Federal surface ownership, applying the appropriate T&E Lease Notices developed through consultation with the USFWS are designed to mitigate potential impacts from mineral development on the identified lease parcels. Requirements outlined in the 2008 RPM, will adequately mitigate potential impacts at the leasing stage to Threatened, Endangered or Candidate (ESA) animal species.</p> <p>For each of the named species below, the 2008 RMP provided potential habitat information potential impacts from mineral development and expected effects once appropriate conservation measures identified in the applicable lease notice are applied. Additional consultation with USFWS will be required prior to the implementation of any project that ‘may affect’ a listed species or habitat. Additional conditions of approval may also be applied to areas of development at that time to ensure protection of ESA animal species and mitigation of potential project impacts</p> <p>The following lease notices and/or stipulation will be applied to the list parcels: T&E-03: Endangered Fish of the Upper Colorado River Drainage Basin: all</p>	
NI	BLM Sensitive Wildlife Species	<p>The Federal Land Policy and Management Act of 1976, Section 102.8, requires environmental resources to be managed to provide food and habitat for fish and wildlife. The Sikes Act instructs agencies to develop, maintain, and coordinate programs for the conservation and rehabilitation of wildlife, fish and game (16 U.S.C. 670<i>et seq.</i>, section 670h). The DOI Manual 632 and BLM Manual 6840 requires conservation of special status species and the ecosystems upon which they depend on BLM-administered lands. Special status species are those listed or proposed for listing under the ESA, and species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA. Instructional Memorandum No. UT IM-2019-005 provides the plant and wildlife Species lists for BLM-administered public lands in Utah and these species have been evaluated for potential impacts from the proposed lease sale.</p> <p>Leasing of the proposed leases would not, by itself, authorize any ground disturbance; however, the proposed lease sale has the potential to impact habitat through future oil and gas development. Although site-specific effects cannot be identified until an exploration or development application is received, attachments of stipulations and notices to leases will assure the opportunity to make adjustments, such as design modifications, at the site specific level when an Application for Permit to Drill is received, to address specific wildlife and plant resources.</p> <p>Great Plains toad UTSO 0920-35, 0920-36 UT-LN-49 Sensitive Species Borrowing owl UTSO 0920-35, 0920-36 UT-LN-44-Raptors UT-S-261 Ferruginous hawk UTSO 0920-35, 0920-36 UT-LN-44-Raptors UT-S-261 Fringed Myotis UTSO 0920-35, 0920-36 UT-LN-49 Sensitive Species</p>	Dave Cook 5/1/2020

Determination	Resource	Rationale for Determination	Parcel Reviewer
		<p>Kit fox UTSO 0920-35, 0920-36 UT-LN-49 Sensitive Species Townsend's big-eared bat UTSO 0920-35, 0920-36 UT-LN-49 Sensitive Species White-tailed prairie dog UTSO 0920-35, 0920-36 UT-LN-49 Sensitive Species Monarch Butterfly UTSO 0920-35, 0920-36 UT-LN-49: Sensitive Species, UT-LN-156: Pollinators and Pollinator Habitat Western bumble bee UTSO 0920-35, 0920-36 UT-LN-49: Sensitive Species, UT-LN-156: Pollinators and Pollinator Habitat</p>	
NI	Fish and Wildlife Excluding USFWS Designated Species	<p>Specific parcels have been identified as having occurrence, or potential occurrence of several species of animals that may require modification of surface use plans to avoid disruptive or harmful activities. In addition, multiple parcels contained sensitive habitat for game species such as elk, mule deer or pronghorn antelope Pronghorn UTSO 0920-35, 0920-36 UT-LN-13</p>	Dave Cook 5/1/2020
Plants			
NI	BLM Sensitive Plant Species	<p>Specific parcels have been identified as having occurrence, or potential occurrence of several species of animals that may require modification of surface use plans to avoid disruptive or harmful activities. In addition, multiple parcels contained sensitive habitat for game species such as elk, mule deer or pronghorn antelope. Lease notices specified by parcel in Appendices A and D of this EA identify those species to make the operator aware of possible additional action. Justification for stipulations and lease notices applied by parcel is discussed in detail in Appendix D of this EA.</p> <p>Leasing of the proposed leases would not, by itself, authorize any ground disturbance; however, the proposed lease sale has the potential to impact habitat through future oil and gas development. Although site-specific effects cannot be identified until an exploration or development application is received, attachments of stipulations and notices to leases will assure the opportunity to make adjustments, such as design modifications, at the site specific level when an Application for Permit to Drill is received, to address specific wildlife and plant resources.</p> <p>Suitable habitat for <i>Yucca sterilis</i> has been identified in parcels 035 and 050</p> <p>The following lease notices and/or stipulation will be applied to all parcels UT-LN-49: Sensitive Species UT-LN-51: Special Status Plants: Not Federally Listed</p>	Aaron Roe 05/01/2020

Determination	Resource	Rationale for Determination	Parcel Reviewer
NI	Threatened, Endangered, Candidate or Proposed Plant Species	<p>The standard stipulations from the Competitive Leasing Handbook H-3120-1, Endangered Species Act (ESA), would be applied to all parcels.</p> <p>For all parcels with Federal surface ownership, applying the appropriate T&E Lease Notices developed through consultation with the USFWS are designed to mitigate potential impacts from mineral development on the identified lease parcels. Requirements outlined in the 2008 RPM, will adequately mitigate potential impacts at the leasing stage to Threatened, Endangered or Candidate (ESA) animal species.</p> <p>For each of the named species below, the 2008 RMP provided potential habitat information potential impacts from mineral development and expected effects once appropriate conservation measures identified in the applicable lease notice are applied. Additional consultation with USFWS will be required prior to the implementation of any project that ‘may affect’ a listed species or habitat. Additional conditions of approval may also be applied to areas of development at that time to ensure protection of ESA plant species and mitigation of potential project impacts</p> <p>The following lease notices and/or stipulation will be applied to the list parcels:</p> <p>T&E-05: Listed Plant Species: 050</p> <p>T&E-12: Pariette Cactus and Uinta Basin Hookless Cactus: 050</p>	Aaron Roe 05/01/2020
NI	Invasive Species/Noxious Weeds (EO 13112)	<p>Executive Order 13112 requires Federal Agencies to promote activities in a manner which avoids introduction or spread of invasive species. Invasive species introduced to Utah affect plant and animal communities Surface disturbing activities have the potential to introduce/spread invasive species/noxious weeds. The BLM “Partners Against Weeds, An Action Plan for the Bureau of Land Management” provides strategies to prevent and control spread of noxious weeds. Noxious weeds are invasive exotic plants designated by the State of Utah as being hazardous to public health, the environment or the economy (Utah Code Title 4, Chapter 17).</p> <p>Infestations of Perennial pepperweed (<i>Lepidium latifolium</i>) and Tamarisk (<i>Tamarix ramosissima</i>) have been reported in the parcels, both class 3 noxious weeds in the State of Utah. However, the infestations were from 1998 and may or not be currently present. The BLM coordinates with County and local governments to conduct an active program for control of invasive species. The lessee/operator is given notice that lands in this lease have been identified as containing or are near areas containing noxious weeds. Standard operating procedures such as washing of vehicles and annual monitoring and spraying along with site specific mitigation applied as conditions of approval (COA) at the APD stage should be sufficient to prevent the spread or introduction of Invasive, Non-native species. All disturbed areas and piles of top-soil should be reseeded with weed free seed the first fall after the disturbance is made to provide competition against weeds.</p> <p>Other 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 conditions of approval. Control measures would be implemented during any ground disturbing activity. Treatment will occur as part of regular operations, BMPs, SOPs and</p>	Lisa Boyd 4/13/2020

Determination	Resource	Rationale for Determination	Parcel Reviewer
		site-specific mitigation applied at the APD stage as COAs. These expectations are required for all parcels in the lease. Application of UT-LN-52 is warranted on all parcels. Negligible impacts would be expected as a result of leasing and exploration.	
NI	Vegetation Excluding Special Status Species	<p>Native plant communities in the project area include intermountain basins mixed salt desert scrub, intermountain basins big sagebrush shrubland, introduced upland vegetation-annual grassland, Grayia spinosa shrubland alliance, Colorado Plateau mixed low sagebrush shrubland, intermountain basins greasewood flat, intermountain basins semi-desert grasslands, Rocky Mountain wetland-herbaceous, and intermountain basins sparsely vegetated systems.</p> <p>Vegetation resources will not be impacted to the degree that will require detailed analysis in this EA. This proposed sale and issuance of oil and gas leases would not authorize any ground disturbances which could affect vegetation resources. Leasing is an administrative action that does not result in any surface disturbance. Site-specific effects cannot be analyzed until an exploration or development application is received, after leasing has occurred. There would be no impacts to vegetation resources through sale of leases. There is some expectation that exploration or development could occur, at which time additional NEPA would be conducted should an APD be filed. The applied lease stipulations and notices will notify buyers during sale of leases and allow for the opportunity to make adjustments at the site-specific level when an APD is received and will ensure impacts are addressed. Future development proposals on the leases would be subject to the standard lease terms, and all applicable laws, regulations and onshore orders in existence at the time of lease issuance. Additional detailed analysis in this EA is not necessary.</p>	Lisa Boyd 4/13/2020
NP	Woodland / Forestry	Not present.	David Palmer 4/13/2020
Water Resources			
NI	Water Resources/ Quality (drinking/ surface/ ground)	<p>There are no identified ground or surface drinking water protection zones in the area of the lease parcels. Multiple water rights held by both BLM and individuals are located in or near the lease parcels. These water rights have beneficial uses of stockwater, irrigation, and domestic. Water quality must continue to be acceptable to meet the beneficial uses of the water right. Exploration and development could cause impacts.</p> <p>The following notices would be added to all parcels with mapped floodplains to inform potential lessees of the requirements of EO 11988: UT-LN-128: Federal Flood Risk Management Standard and UT-S-123 No Surface Occupancy Riparian, Floodplains, and Public Water Reserves.</p> <p>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 (O.O.) No. 7 and the requirements for drilling operations</p>	Jerrad Goodell April 10, 2020

Determination	Resource	Rationale for Determination	Parcel Reviewer
		<p>contained in O.O No. 2. Potential fresh water aquifers zones would be protected by the requirement of casing and cementing the drill hole to total depth. The casing would be pressure tested to ensure integrity prior to drilling out the surface casing shoe plug.</p> <p>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 springs, 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).</p> <p>BMPs, SOPs and site specific mitigation may be applied at the APD stage as COAs.</p> <p><u>Stipulations</u> UT-S-123 on parcel 50.</p> <p><u>Notices</u> UT-LN-128 on parcel 50.</p>	
NI	Wetlands/ Riparian Zones / Floodplains	<p>Through resource knowledge and/or GIS analysis of the National Wetlands Inventory layer, no parcels were identified as containing riparian and/or wetland systems. Mapped Floodplains (as defined in EO 11988) occur on all parcel 50. However, since these parcels would have the following stipulations attached, impacts from exploration/development to those resources would be prevented.</p> <p>Leasing of parcels would not directly affect these resources. BMPs, SOPs, and site specific mitigation may be applied at the APD stage as COAs.</p> <p><u>Stipulations</u> UT-S-123 on parcel 50.</p> <p><u>Notices</u> UT-LN-128 on parcel 50.</p>	Jerrad Goodell April 10, 2020
NI	Soils: Physical/ Biological	<p>At this stage (lease sale) there would be no impacts to vegetation resources. There is some expectation that exploration or 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. 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 seed mix based on the ecological site, elevation and topography), road reclamation, noxious weed controls, etc. The parcels UT0920-035 and UT0920-50 contain steep topography; lease stipulations will be add to protect the steep</p>	David Gordon April 1, 2020

Determination	Resource	Rationale for Determination	Parcel Reviewer
		<p>topography. SOPs, BMPs and site specific design features applied at the APD stage including reclamation, may be applied as COAs.</p> <p><u>Stipulations</u></p> <p>UT-S-96 on all parcels No Surface Occupancy – Fragile Soil/Slopes Greater Than 40%.</p> <p>UT-S-99 on all parcels Controlled Surface Use – Fragile Soil/Slopes</p> <p>UT-S-100 on all parcels Controlled Surface Use – Fragile Soil/Slopes (21%-40%)</p>	
Rangeland Health			
NI	Farmlands (Prime or Unique)	Soil map units that are classified by the NRCS as farmland may intersect these parcels. None of these would be irrigated due to exploration or development activities. These soils would not be utilized in agricultural practices while retained in BLM ownership. BMPs, SOPs and site specific mitigation may be applied at the APD stage as COAs.	David Gordon April 1, 2020
NI	Fuels/Fire Management	Exploration or development would not conflict with the Fire Management Plan goals and objectives. 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. BMPs, SOPs, and site specific mitigation may be applied at the APD stage as COAs.	Blaine Tarbell 4/13/2020
NI	Livestock Grazing	<p>Some of the parcels are located within livestock grazing allotments or private pastures. Leasing or production activities would not cause changes to grazing permit terms and conditions. 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 or vegetation monitoring plots as per 43 CFR 3101.1-2. BMPs, SOPs and site specific mitigation may be applied at the APD stage as COAs.</p> <p>The three allotments that have parcels or portions of parcels included within the boundaries have permitted seasons of use that vary from winter to spring. Livestock type authorized include cattle.</p> <p>The following specific parcels were determined to have possible effects to Livestock Grazing and Rangeland Health Standards if oil and gas are developed. There are 1440 acres proposed for leasing within the allotments listed below. All allotments have been evaluated for rangeland health standards within the last 12 years. Specific impacts to rangeland</p>	Travis Decker 4/10/2020

Determination	Resource	Rationale for Determination	Parcel Reviewer						
		<p>health standards as address in CFR 43 part 4100, subpart 4180 would require site specific analysis beyond the scope of this specific leasing document.</p> <table border="1"> <tr> <td>Parcel Number</td> <td>Grazing Allotments</td> </tr> <tr> <td>035</td> <td>Castle Peak</td> </tr> <tr> <td>050</td> <td>Little Desert, Eight Mile</td> </tr> </table> <p>Possible effects may also occur to existing range improvements. Both parcels have existing water developments present. Possible effects may also occur to other Range Improvement Projects throughout the three federal grazing allotments. Individual NEPA analysis documents would analyze the site specific impacts to the livestock grazing operations, range improvement projects and rangeland health standards.</p> <p>The allotments the lease parcels covers would range from desert salt shrub, sage steppe. Elevation ranges from around 5,000 feet to upwards of 5,500 feet in elevation. Most areas are located within the 5–8 inch annual precipitation zone. Allotments identified within the lease sale parcels will have grazing permits continued with existing terms and conditions through authority determined within the Federal Land Policy Management Act amendment, until those grazing permits can be processed through site-specific NEPA documents analyzing the current and on-going oil and gas activities.</p>	Parcel Number	Grazing Allotments	035	Castle Peak	050	Little Desert, Eight Mile	
Parcel Number	Grazing Allotments								
035	Castle Peak								
050	Little Desert, Eight Mile								
NP	Wild Horses and Burros	The parcels do not intersect herd areas or herd management areas.	David Gordon April 1, 2020						
Lands and Minerals									
NI	Lands/Access	<p>Leasing parcels would have no effect on property boundaries. In accordance with WO IM 2011-122, cadastral survey reviews and verifies the legal land descriptions prior to lease issuance. Stone monuments may be present and would need to be avoided the same as metal cap monuments. Detailed land surveys may be warranted at the APD stage. BMPs, SOPs and site specific mitigation may be applied at the APD stage as COAs.</p> <p>Parcels 035 and 050 have existing rights-of-way, coordination with existing right-of-way holders in the proposed lease parcels would occur if their right-of-way would be affected.</p> <p>Uintah County claimed roads are within lease parcels 035 and 050. Coordination with Uintah County would need to occur if the roads need to be upgraded and to determine if other permits are required.</p> <p><u>Notices:</u> UT-LN-83 on parcels 035 and 050.</p>	Patrick Ahrnsbrak 4/13/2020						

Determination	Resource	Rationale for Determination	Parcel Reviewer
NI	Geology / Mineral Resources/ Energy Production	<p>Oil and gas exploration could lead to an increased understanding of the geologic setting, as subsurface data obtained through lease operations may become public record. This information promotes an understanding of mineral resources as well as geologic interpretation. While conflicts could arise between oil and gas operations and other mineral operations, these could generally be mitigated under 43 CFR 3101.1-2 and under standard lease terms (Sec. 6) where sitting and design of facilities may be modified to protect other resources.</p> <p>Depending on the success of oil and gas drilling, non-renewable natural gas and/or oil would be extracted and delivered to market. Production would result in the irretrievable loss of these resources. The RFDS is documented at section 2.2.1. The proposed action would not exceed the level of activity predicted in the RFDS.</p> <p>Any oil and gas development can be managed to avoid or work within other mineral resources. Mining claims and Mineral Materials were checked on 4/13/2020. No active placer claims or Mineral Material sites were found to be associated within any parcel.</p> <p>If the parcels are developed, wells within the parcels may be completed using hydraulic fracturing techniques. Additional information is provided in Appendix G. "FracFocus," is a database available to the public online at http://fracfocus.org/. Public has expressed concerns that:</p> <ul style="list-style-type: none"> • Spills during the management of hydraulic fracturing fluids and chemicals or produced water that result in large volumes or high concentrations of chemicals reaching groundwater resources; • Injection of hydraulic fracturing fluids into wells with inadequate mechanical integrity, allowing gases or liquids to move to groundwater resources; and, • Discharge of inadequately treated hydraulic fracturing wastewater to surface water resources. <p>Before operators or service companies preform hydraulic fracturing treatment, a series of tests are preformed to ensure well, casing, and well equipment are in proper order and will safely withstand the application of the fracture treatment pressures and flow rates. Operators must comply with O.O. #2 and O.O. # 7. If fracking should occur in an area where there is no vertical separation between the hydraulically fractured rock formation and the bottom of the potential underground drinking water source, fracking fluid may be introduced into the source.</p> <p>The majority of flow back water from hydraulic fracturing in Utah is recycled and used in future hydraulic fracturing completions. Therefore, the underground injection of hydraulic fracturing flow back in Utah is very limited and presents little potential for inducing seismic activity. In fact, there has been no reported induced seismicity in Utah that was from water injected into Class II wells. Oil and gas wells produce a great amount of wastewater. The majority this water has high salt brine content and must be disposed of in an environmentally safe manner. In Utah, a majority (95%) of this produced water is pumped into Class II injection wells. In certain parts of the country, water injection has caused some induced seismicity in the form of small earthquakes. Two major factors play a role in induced seismicity from water injection. First, the amount of water being injected. Secondly, the local geology of the water injection site. In Utah, the volumes are lower than those states experiencing induced seismicity. Also, the geology is different than those states</p>	<p>Dallas Nutt 4/13/2020 Angela Wadman 5/7/2020</p>

Determination	Resource	Rationale for Determination	Parcel Reviewer
		<p>experiencing induced seismicity. The injection zones are stratigraphically thousands of feet above the basement rock that may contain large unknown faults. Therefore, at this time it appears that induced seismicity from water injection is not a problem in the oil fields of Utah. (Personal communication from John Rogers, Utah Division of Oil, Gas and Mining (UDOGM), March 27, 2018).</p> <p>In conclusion, there would be no negative affects to mineral resources. Lease stipulations and notices are created to mitigate impacts of oil and gas development on other resources.</p>	
NP	Paleontology	There are no known paleontological resources within the parcels. If an APD is filed, specific clearances would be conducted and incorporated into that NEPA process. If paleontological resources are located, the AO would be contacted. BMPs, SOPs and site specific mitigation may be applied at the APD stage as COAs.	Dallas Nutt 4/13/2020
NI	Wastes (hazardous or solid)	Hazardous materials are not known to exist on the parcels. Refer also to the Air Quality discussion for specific information on hazardous air pollutants (HAPs). Hazardous materials, if not handled properly that are associated with operations, have the potential to be spilled at the lease/drill site. However, the spill would be contained, reported, and cleaned up by the operator. BMPs, SOPs and site specific mitigation may be applied at the APD stage as COAs.	David Gordon April 1, 2020

**West Desert District
Fillmore Field Office**

Determination	Resource	Rationale for Determination	Parcel Reviewer
Resources And Issues Considered (Includes Supplemental Authorities Appendix 1 H-1790-1)			
Recreation			
NP	Areas of Critical Environmental Concern	The are no ACEC's intersecting or proximate to the parcels	Sheri Wysong 4/27/20
NP	Units of the National Park Service/Nation-al Historic Trails	The parcels do not intersect any National Historic Trails, nor are proximate to any units of the National Park Service.	Sheri Wysong 4/27/20
NI	Recreation	Dispersed recreation may occur on the parcels, but there are no specific sites on the parcels that are of particular importance to recreationalists.	Sheri Wysong 4/27/20

Determination	Resource	Rationale for Determination	Parcel Reviewer
NI	Travel/ Transportation	No scenic highways are in the vicinity of the parcels.	Sheri Wysong 4/27/20
NI	Visual Resources	Parcels are designated VRM III and IV. There are no sites in the area that would be impacted from visual intrusions from oil and gas development	Sheri Wysong 4/27/20
NP	Wild and Scenic Rivers	No eligible or suitable river segments have been identified in the vicinity of the parcels.	Sheri Wysong 4/27/20
NP	Wilderness/ Wilderness Study Area	No wilderness or wilderness study areas are the in the vicinity of the parcels.	Sheri Wysong 4/27/20
NP	Lands with wilderness characteristics	No areas with wilderness characteristics proximate to the parcels are large enough to be considered for wilderness.	Sheri Wysong 4/27/20
Cultural			
NI	Cultural Resources	<p>BLM Archaeologists compiled cultural resource data from the Fillmore Field Office cultural resource library, GIS data (CURES), the Utah Department of Heritage and Arts Archaeological Records Database (UDAM) and the Preservation Pro database. These data sources contain information on all of the recorded cultural resource sites and cultural resource surveys conducted within and adjacent to the proposed lease parcels.</p> <p>The BLM has drafted a cultural resources report for the remaining parcels included in the September 2020 sale. Once complete, the report will be sent for Tribal and Consulting Party review before submission to the Utah SHPO for review and concurrence on the finding of effect.</p> <p>BLM Archaeologists at the Field and State Office level reviewed this data against the lease sale parcel locations to determine if oil and gas development could occur in accordance with the appropriate Reasonably Foreseeable Development Scenario for each parcel, without incurring adverse effects to historic properties, taking into consideration impacts to cultural resources as well. The parcels were also reviewed for the application of stipulations and lease notices as required by the Fillmore Field Office Resource Management Plan.</p> <p>For future undertakings related to this lease sale, the BLM will not approve any ground disturbing activities until it completes it's obligations to consider cultural resources under the NEPA, the NHPA,</p>	Nicole Lohman 4/30/20

Determination	Resource	Rationale for Determination	Parcel Reviewer
		<p>and other authorities specific to those future undertakings. Consideration of impacts to cultural resources and potential adverse effects to historic properties will be taken into account during the review stage of site-specific development plans.</p> <p>The Cultural Resource Stipulation as required by Handbook H-3120-1 applies to all parcels.</p>	
NI	Native American Religious Concerns	<p>Native American Tribes were contacted via Certified Letter on April 3, 2020. Consultation is ongoing. No BLM known Traditional Cultural Properties or Sacred Sites are located within the parcel. However, resources and locations of Native American religious and traditional concern may be present within the proposed parcels. The BLM will consult with Indian tribes on a government-to-government basis, if requested by any Tribe. Additional coordination and consultation would be initiated at the APD stage. BMPs, SOPs and site-specific mitigation may be applied at the APD stage as COAs.</p>	Nicole Lohman 4/30/20
Wildlife			
NI	Migratory Birds	<p>All of the parcels are habitat utilized by migratory birds at various times throughout the year. Future oil and gas exploration and development may effect migratory birds or their seasonal habitats through exploration, development, or production activities. When a lessee files an APD, outlining in detail the scope of the proposed action those impacts would be fully analyzed in additional environmental documents through the NEPA process. Conditions of Approval (COAs) would also be placed on the APD to reduce impacts to migratory birds to the extent feasible when necessary.</p> <p>Applicable Lease Notices: UT-LN-44 (Raptors), UT-LN-45 (Migratory Birds), UT-LN-49 (Utah Sensitive Species), UT-S-263 (Crucial Raptor Nesting Area) and UT-LN-107: Statewide Bald Eagle.</p>	Dave Cook 4/29/2020
NI	Threatened, Endangered, Candidate or Proposed Animal Species	<p>As of 4/29/2020 there are no Federally listed, proposed, or candidate wildlife species or critical habitat known to occur in the vicinity of the proposed oil and gas lease parcels. Therefore, this project would be “no effect” to Threatened, Endangered, or Candidate animal species.</p>	Aaron Roe 4/29/2020
NI	BLM Sensitive Wildlife Species	<p>Sensitive raptor and migratory bird species are discussed in the Migratory Bird Section. In addition, various bats species can be anticipated to use the lease parcels at various levels through the year.</p> <p>Future oil and gas exploration and development may effect sensitive species through exploration, development, or production activities. When a lessee files an APD, outlining in detail the scope of the proposed action those impacts would be fully analyzed in additional environmental documents through the NEPA process. Conditions of Approval (COAs) would also be placed on the APD to reduce impacts to sensitive species to the extent feasible when necessary.</p> <p>Applicable leases notices: UT-LN-49 Sensitive Species</p>	Dave Cook 4/29/2020

Determination	Resource	Rationale for Determination	Parcel Reviewer
NI	Fish and Wildlife Excluding USFWS Designated Species	General wildlife and/or game species that can may be use the parcels at various levels of the year include mule deer, elk, band tailed pigeon, chuker, and wild turkey. Applicable stipulations: UT-S-234-Deer Winter	Dave Cook 4/29/2020
Plants			
NI	BLM Sensitive Plant Species	As of 4/29/2020 there are no known populations of non-federally listed special status plant species in the vicinity of the proposed parcels	Aaron Roe 4/29/2020
NI	Threatened, Endangered, Candidate or Proposed Plant Species	As of 4/29/2020 there are no Federally listed, proposed, or candidate plant species or critical habitat known to occur in the vicinity of the proposed oil and gas lease parcels. Therefore, this project would be “no effect” to Threatened, Endangered, or Candidate animal species.	Aaron Roe 4/29/2020
NI	Invasive Species/Noxious Weeds (EO 13112)	<p>Executive Order 13112 requires Federal Agencies to promote activities in a manner which avoids introduction of spread of invasive species. Invasive species introduced to Utah affect plant and animal communities Surface disturbing activities have the potential to introduce/spread invasive species/noxious weeds. The BLM “Partners Against Weeds, An Action Plan for the Bureau of Land Management” provides strategies to prevent and control spread of noxious weeds Invalid source specified. Noxious weeds are invasive exotic plants designated by the State of Utah as being hazardous to public health, the environment or the economy (Utah Code Title 4, Chapter 17).</p> <p>Noxious/invasive weed species may be present on the subject parcels. The BLM coordinates with County and local governments to conduct an active program for control of invasive species. The lessee/operator is given notice that lands in this lease have been identified as containing or are near areas containing noxious weeds. Standard operating procedures such as washing of vehicles and annual monitoring and spraying along with site specific mitigation applied as conditions of approval (COA) at the APD stage should be sufficient to prevent the spread or introduction of Invasive, Non-native species. All disturbed areas and piles of top-soil should be reseeded with weed free seed the first fall after the disturbance is made to provide competition against weeds.</p> <p>Other 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 conditions of approval. Control measures would be implemented during any ground disturbing activity. Treatment will occur as part of regular operations, BMPs, SOPs and site-specific mitigation applied at the APD stage as COAs. These expectations are required for all parcels in the lease.</p>	Trevor Riding 4/13/2020

Determination	Resource	Rationale for Determination	Parcel Reviewer
		<p>Application of UT-LN-52 is warranted on all parcels. Negligible impacts would be expected as a result of leasing and exploration.</p> <p>Lease Notice</p> <p>UT-LN-52 attached to all parcels.</p>	
NI	Vegetation Excluding Special Status Species	<p>Vegetation resources will not be impacted to the degree that will require detailed analysis in this EA. This proposed sale and issuance of an oil and gas leases would not authorize any ground disturbances which could affect vegetation resources. Leasing is an administrative action that does not result in any surface disturbance. Site-specific effects cannot be identified until an exploration or development application is received, after leasing has occurred. There would be no impacts to vegetation resources through sale of leases. There is some expectation that exploration or development could occur, at which time additional NEPA would be conducted should an APD be filed. The applied lease stipulations and notices will notify buyers during sale of leases and allow for the opportunity to make adjustments at the site-specific level when an APD is received and will ensure impacts are addressed. Future development proposals on the leases would be subject to the standard lease terms, and all applicable laws, regulations and onshore orders in existence at the time of lease issuance. SOPs, BMPs and site specific design features applied at the APD stage including reclamation, would be applied as COAs. Additional detailed analysis in this EA is not necessary.</p>	DaShell Burnham 4/09/2020
NI	Woodland / Forestry	<p>Scattered sparse woodlands exist in areas adjacent to all parcels included in the proposed lease sale, but not in quantities sufficient to establish public harvest areas. Exploration or development would not limit use or access to any established wood sale areas. BMPs, SOPs and site-specific mitigation may be applied at the APD stage as COAs. Per 43 CFR 5400 Sale of Forest Products, permits are required for severance and removal of forest products regardless of whether the product is utilized or not.</p>	Eric Reid 4/14/2020
Water Resources			
NI	Water Resources/ Quality (drinking/ surface/ ground)	<p>There are no identified ground or surface drinking water protection zones in the area of the lease parcels.</p> <p>Multiple water rights held by both BLM and individuals are located in or near the lease parcels. These water rights have beneficial uses of stockwater, irrigation, and domestic. Water quality must continue to be acceptable to meet the beneficial uses of the water right as defined by state and federal regulations. Exploration and development could cause potential impacts.</p> <p>The following notice would be added to all parcels to inform potential lessees of the requirements of EO 11988: UT-LN-126: Federal Flood Risk Management Standard.</p> <p>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 (O.O.) No. 7 and the requirements for drilling operations</p>	Eric Reid 4/14/2020 Jared Dalebout 5/1/2020

Determination	Resource	Rationale for Determination	Parcel Reviewer
		<p>contained in O.O No. 2. Potential fresh water aquifers zones would be protected by the requirement of casing and cementing the drill hole to total depth. The casing would be pressure tested to ensure integrity prior to drilling out the surface casing shoe plug.</p> <p>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 springs, 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).</p> <p>BMPs, SOPs and site specific mitigation may be applied at the APD stage as COAs.</p>	
NI	Wetlands/ Riparian Zones / Floodplains	<p>Through resource knowledge and/or GIS analysis of the National Wetlands Inventory layer, parcel 005 was identified as containing riparian and/or wetland systems. Floodplains (as defined in EO 11988) are also associated with these lentic and lotic systems sand may occur on all parcels. However, since these parcels would have the following stipulations attached, impacts from exploration/development to those resources would be prevented.</p> <p><u>Notices</u> UT-LN-126 attached to parcel 005 UT-LN-53 attached to parcel 005</p> <p>Leasing of parcels would not directly affect these resources. BMPs, SOPs, and site specific mitigation may be applied at the APD stage as COAs.</p>	Cassie Mellon 4/9/2020
NI	Soils: Physical/ Biological	<p>At this stage (lease sale) there would be no impacts to vegetation resources. There is some expectation that exploration or 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. 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 seed mix based on the ecological site, elevation and topography), road reclamation, noxious weed controls, etc. The parcels contain steep topography; additional discussion of steep slopes is contained within the minerals section. SOPs, BMPs and site specific design features applied at the APD stage including reclamation, may be applied as COAs.</p> <p><u>Lease Notice</u> UT-LN-59 and UT-LN-60 on parcels 005 and 006.</p>	Burke Davenport 4/13/2020
Rangeland Health			

Determination	Resource	Rationale for Determination	Parcel Reviewer
NI	Farmlands (Prime or Unique)	Soil map units that are classified by the NRCS as farmland may intersect these parcels. None of these would be irrigated due to exploration or development activities. These soils would not be utilized in agricultural practices while retained in BLM ownership. BMPs, SOPs and site specific mitigation may be applied at the APD stage as COAs.	DaShell Burnham 4/09/2020
NI	Fuels/Fire Management	Exploration or development would not conflict with the Fire Management Plan goals and objectives. 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. BMPs, SOPs, and site specific mitigation may be applied at the APD stage as COAs.	Gary Bishop 4/14/2020
NI	Livestock Grazing	Some of the parcels are located within livestock grazing allotments or private pastures. Leasing or production activities would not cause changes to grazing permit terms and conditions. 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 or vegetation monitoring plots as per 43 CFR 3101.1-2. BMPs, SOPs and site specific mitigation may be applied at the APD stage as COAs.	DaShell Burnham 4/09/2020
NI	Wild Horses and Burros	The parcels do not intersect herd areas or herd management areas.	Trent Staheli 4/9/2020
Lands and Minerals			
NI	Lands/Access	Leasing parcels would have no effect on property boundaries. In accordance with WO IM 2011-122, cadastral survey reviews and verifies the legal land descriptions prior to lease issuance. Stone monuments may be present and would need to be avoided the same as metal cap monuments. Detailed land surveys may be warranted at the APD stage. BMPs, SOPs and site specific mitigation may be applied at the APD stage as COAs.	Kyle Monroe 4/14/2020
NI	Geology / Mineral Resources/ Energy Production	Oil and gas exploration could lead to an increased understanding of the geologic setting, as subsurface data obtained through lease operations may become public record. This information promotes an understanding of mineral resources as well as geologic interpretation. While conflicts could arise between oil and gas operations and other mineral operations, these could generally be mitigated under 43 CFR 3101.1-2 and under standard lease terms (Sec. 6) where sitting and design of facilities may be modified to protect other resources.	Stephanie deGraffenreid 4/15/2020 Angela Wadman 4/27/2020

Determination	Resource	Rationale for Determination	Parcel Reviewer
		<p>Depending on the success of oil and gas drilling, non-renewable natural gas and/or oil would be extracted and delivered to market. Production would result in the irretrievable loss of these resources. The RFDS is documented at section 2.2.1. The proposed action would not exceed the level of activity predicted in the RFDS.</p> <p>Any oil and gas development can be managed to avoid or work within other mineral resources. Mining claims and Mineral Materials were checked on April 14, 2020. No active placer claims or Mineral Material sites were found to be associated within any parcel.</p> <p>If the parcels are developed, wells within the parcels may be completed using hydraulic fracturing techniques. Additional information is provided in Appendix G. “FracFocus,” is a database available to the public online at http://fracfocus.org/. Public has expressed concerns that:</p> <ul style="list-style-type: none"> • Spills during the management of hydraulic fracturing fluids and chemicals or produced water that result in large volumes or high concentrations of chemicals reaching groundwater resources; • Injection of hydraulic fracturing fluids into wells with inadequate mechanical integrity, allowing gases or liquids to move to groundwater resources; and, • Discharge of inadequately treated hydraulic fracturing wastewater to surface water resources. <p>Before operators or service companies preform hydraulic fracturing treatment, a series of tests are preformed to ensure well, casing, and well equipment are in proper order and will safely withstand the application of the fracture treatment pressures and flow rates. Operators must comply with O.O. #2 and O.O. # 7. If fracking should occur in an area where there is no vertical separation between the hydraulically fractured rock formation and the bottom of the potential underground drinking water source, fracking fluid may be introduced into the source.</p> <p>The majority of flow back water from hydraulic fracturing in Utah is recycled and used in future hydraulic fracturing completions. Therefore, the underground injection of hydraulic fracturing flow back in Utah is very limited and presents little potential for inducing seismic activity. In fact, there has been no reported induced seismicity in Utah that was from water injected into Class II wells. Oil and gas wells produce a great amount of wastewater. The majority this water has high salt brine content and must be disposed of in an environmentally safe manner. In Utah, a majority (95%) of this produced water is pumped into Class II injection wells. In certain parts of the country, water injection has caused some induced seismicity in the form of small earthquakes. Two major factors play a role in induced seismicity from water injection. First, the amount of water being injected. Secondly, the local geology of the water injection site. In Utah, the volumes are lower than those states experiencing induced seismicity. Also, the geology is different than those states experiencing induced seismicity. The injection zones are stratigraphically thousands of feet above the basement rock that may contain large unknown faults. Therefore, at this time it appears that induced seismicity from water injection is not a problem in the oil fields of Utah. (Personal communication from John Rogers, Utah Division of Oil, Gas and Mining (UDOGM), March 27, 2018).</p>	

Determination	Resource	Rationale for Determination	Parcel Reviewer
		In conclusion, there would be no negative affects to mineral resources.	
NI	Paleontology	<p>There are no known paleontological resources within the parcels. However, parcels 004 and 005 are located within Geologic units that are known to contain high occurrence of paleontological resources. Units assigned to Class 4 typically have the following characteristics:</p> <ul style="list-style-type: none"> • Significant paleontological resources have been documented, but may vary in occurrence and predictability. • Surface disturbing activities may adversely affect paleontological resources, • Rare or uncommon fossils, including nonvertebrate (such as soft body preservation) or unusual plant fossils, may be present. • Illegal collecting activities may impact some areas. <p>Management concerns for paleontological resources in Class 4 are moderate to high, depending on the proposed action.</p> <p>Paleontological mitigation strategies will depend on the nature of the activity, but field assessment by a qualified paleontologist is normally needed to assess local conditions.</p> <p>If an APD is filed, specific clearances would be conducted and incorporated into that NEPA process. If paleontological resources are located, the AO would be contacted. BMPs, SOPs and site specific mitigation may be applied at the APD stage as COAs.</p> <p><u>Notices</u> UT-LN-72 attached to parcel 004 and 005</p>	Stephanie deGraffenreid 4/15/2020
NI	Wastes (hazardous or solid)	Hazardous materials are not known to exist on the parcels. Refer also to the Air Quality discussion for specific information on hazardous air pollutants (HAPs). Hazardous materials, if not handled properly that are associated with operations, have the potential to be spilled at the lease/drill site. However, the spill would be contained, reported, and cleaned up by the operator. BMPs, SOPs and site specific mitigation may be applied at the APD stage as COAs.	Stephanie deGraffenreid 4/15/2020

Appendix E – General Conformity Applicability

The Clean Air Acts General Conformity Rule mandates that the BLM evaluate reasonably foreseeable emissions that result from its actions in a nonattainment area to determine if they conform with the applicable regulatory agency implementation plans (40 CFR 93.153). The rule takes into account air pollution emissions associated with actions that are federally funded, licensed, permitted, or approved, and ensures emissions do not contribute to air quality degradation, thus preventing the achievement of state and federal air quality goals. In short, general conformity refers to the process of evaluating plans, programs, and projects to determine and demonstrate they meet the requirements of the CAA and an applicable implementation plan.

The General Conformity Rule divides the air conformity process into two distinct areas, applicability and determination. Federal agencies must initially assess if an action is subject to the Conformity Rule (Applicability Analysis) and then if the action conforms to an applicable implementation plan (Conformity Determination). Guidance from Information Bulletin 2014-084 (BLM 2014) was used to perform an applicability analysis in order to determine if a conformity determination is needed for this lease.

The general conformity rules are not applicable to this lease sale because: 1) leasing does not directly authorize pollutant emitting activities, and no direct emissions would result, 2) indirect emissions are not reasonably foreseeable as defined in 40 CFR § 93.152 as it is unknown what design features or mitigation measures an operator will use, and 3) it is unknown what emissions sources would be included in an air quality permit and not subject to a general conformity review. The BLM has evaluated the proposed lease sale in accordance with the provisions of 40 CFR Part 93, Subpart B. Based on a review of 40 CFR § 93.153(c), BLM has determined that the requirement to perform a full conformity determination is not required for the proposed action for the following reasons:

- Under 40 CFR § 93.153(c)(2), a conformity determination is not required for actions “which would result in no emissions increase or an increase in emissions that is clearly de minimis,” such as the “granting of leases.” Leasing does not authorize emissions generating activities, and therefore does not directly result in an emissions increase. Additionally, 40 CFR § 93.153(c)(3) lists Initial Outer Continental Shelf leasing as not having reasonably foreseeable emissions and onshore leasing is similar where lease sales “are made on a broad scale and are followed by exploration and development plans on a project level.” At the leasing stage the BLM does not have a development plan for lease parcels and has determined that indirect emissions are not reasonably foreseeable until the project level.
- A conformity determination also is not required “where the emissions (direct or indirect) are not reasonably foreseeable.” 40 CFR § 93.153(c)(3). As defined in the CAA, “Reasonably foreseeable emissions are projected future direct and indirect emissions that are identified at the time the conformity determination is made; the location of such emissions is known and the emissions are quantifiable as described and documented by the Federal agency based on its own information and after reviewing any information presented to the Federal agency.” 40 CFR § 93.152 While this EA provides information for the factors that should be considered to determine a reasonable *estimate* of foreseeable emissions for the proposed lease parcels and overall for the region for purposes of NEPA indirect and cumulative impacts analysis, it does not have specific information about whether or how the specific parcel under consideration will be developed during the initial 10 year lease period, such that a more precise emissions inventory could be reasonably estimated and compared to the thresholds provided in 40 CFR § 93.153(b).

- Furthermore, 40 CFR § 93.153(d) provides, “[notwithstanding the other requirements of this subpart, a conformity determination is not required for:
 - The portion of an action that includes major or minor new or modified stationary sources that require a permit under the new source review (NSR) program (Section 110(a)(2)(c) and Section 173 of the [CAA]) or the prevention of significant deterioration program (title I, part C of the [CAA]).” 40 CFR 93.153(d)(1). It is uncertain at this time, but highly likely, that several project design features, for example equipment sets, such as storage vessels, truck loading, wellsite stationary engines, VOC control devices, dehydration units, and other equipment will require at least a minor new source review (permit) prior to constructing such facilities to implement any subsequent development proposals. Emissions from such permitted facilities would not be subject to the general conformity analysis provisions. Potential sources that would be permitted, and not subject to general conformity provisions, are identified in Utah Administrative Code R307-504-511 or the Federal Implementation Plan for the Indian Country Minor New Source Review Program for the Oil and Natural Gas Industry (80 FR 51991).

For all of these reasons, a conformity determination is not required for the sale of the leases under consideration.

Appendix F – Acronyms/Abbreviations

AO	Authorized Officer	MtFO	Monticello Field Office
APD	Application for Permit to Drill	NESHAP	National Emission Standards For Hazardous Air Pollutants
ARMPA	Approved Resource Management Plan Amendments	NCLS	Notice of Competitive Lease Sale
BCR	Bird Conservation Region	NHPA	National Historic Preservation Act
BLM	Bureau of Land Management	NRHP	National Register of Historic Places
BMP	Best Management Practice	NSO	No Surface Occupancy
CAA	Clean Air Act	O.O.	Onshore Oil and Gas Order
CCFO	Cedar City Field Office	PLPCO	Public Lands Policy Coordinating Office
CFR	Code of Federal Regulations	PARFDS	GRSG Population Area Reasonably Foreseeable Development Scenario
CIAA	Cumulative Impact Analysis Area	PFO	Price Field Office
COA	Condition of Approval	PHMA	Priority Habitat Management Area
CWCS	Comprehensive Wildlife Conservation Strategy	RFDS	Reasonably Foreseeable Development Scenario
DR	Decision Record	RFO	Richfield Field Office
EA	Environmental Assessment	RMP	Resource Management Plan
EAR	Environmental Analysis Record	ROD	Record of Decision
EIS	Environmental Impact Statement	ROW	Right of Way
EOI	Expression of Interest	S	Stipulation
EPA	Environmental Protection Agency	SHPO	State Historic Preservation Office
ESA	Endangered Species Act	SITLA	State Institutional Trust Lands Administration
FFO	Fillmore Field Office	UDAQ	Utah Division of Air Quality
FLPMA	Federal Land Policy and Management Act	UDWR	Utah Division of Wildlife Resources
FONSI	Finding of No Significant Impact	USFS	United States Forest Service
GIS	Geographical information System	USFWS	United States Fish & Wildlife Service
GWP	Global Warming Potential	UT	Utah
H	Handbook	UTSO	Utah State Office
IDPRT	Interdisciplinary Parcel Review Team	VFO	Vernal Field Office
IM	Instruction Memorandum	WA	Wilderness Area
LWC	Lands With Wilderness Characteristics	WO	Washington Office
LN	Lease Notice		
MFO	Moab Field Office		

Appendix G – Reasonably Foreseeable Development of Leases Scenario

All nominated lease parcels fall within areas that are open to leasing under the RMPs indicated above, as amended. Lease parcels, lease parcel surface ownership, lease parcel legal descriptions and total acreage, and lease stipulations and notices that apply are detailed in Appendix A.

Purchasers of oil and gas lease parcels are required to comply with all applicable federal, state, and local laws and regulations, including obtaining all necessary permits prior to any lease development activities. A listing of applicable statutes, regulations, and other plans is provided in Table 16 Relationship to Statutes, Regulations, and Other Plans.

Table 19 Relationship to Statues, Regulations, and Other Plans

Relevant Statue, Regulation, or Plan	Relationship to the Proposed Action
Federal Land Policy and Management Act (FLPMA)	<ul style="list-style-type: none"> Federal Land Policy and Management Act of 1976 (FLMPA) <p>The FLPMA established guidelines to provide for the management, protection, development, and enhancement of public lands (Public Law [PL] 94-579). Section 103(e) of FLPMA defines public lands as any lands and interest in lands owned by the United States. For split-estate lands where the mineral estate is an interest owned by the United States, the BLM has no authority over use of the surface by the surface owner; however, the BLM is required to disclose potential impacts connected to the authorization to lease and develop federal mineral estate and to declare how federal mineral estate is managed in the RMP, including identification of all appropriate lease stipulations (43 CFR 3101.1 and 43 CFR 1601.0-7(b); BLM Handbook H-1601.09 and H-1624-1)</p>
Mineral Leasing Act (MLA)	<ul style="list-style-type: none"> Mineral Leasing Act of 1920 (MSA) <p>The MLA establishes that deposits of oil and gas owned by the United States are subject to disposition in the form and manner provided by the MLA under the rules and regulations prescribed by the Secretary of the Interior, where consistent with FLPMA, the National Environmental Policy Act (NEPA) of 1969, as amended (PL 91-90, 42 United States Code [USC] 4321 et seq.), and other applicable laws, regulations, and policies.</p>
43 CFR 3100	These regulations govern onshore oil and gas leasing, development, and production of federal minerals.
43 CFR 3101.1-2	A lessee has surface rights subject to: Stipulations attached to the lease; restrictions deriving from specific nondiscretionary statues; and such reasonable measures as may be required by the authorized officer to minimize adverse impacts to other resource values, land uses or users not addressed in the lease stipulations at the time operations are proposed.
43 CFR 3101-1.3	The authorized officer may require stipulations as conditions of lease issuance. Stipulations shall become part of the lease and shall supersede inconsistent provisions of the standard lease form.
Federal Onshore Oil and Gas Leasing Reform Act	<ul style="list-style-type: none"> Federal Onshore Oil and Gas Leasing Reform Act of 1987 (FOOGLRA) <p>This act directs the BLM to conduct quarterly oil and gas lease sales whenever eligible lands are available for leasing.</p>

Endangered Species Act (ESA)	<ul style="list-style-type: none"> • Endangered Species Act of 1973 (ESA) <p>The ESA requires all federal departments and agencies to conserve threatened, endangered, and critical and sensitive species and the habitats on which they depend, as well as consult with the U.S. Fish and Wildlife Service on all actions authorized, funded, or carried out by the agency to ensure that the action will not likely jeopardize the continued existence of any threatened and endangered species or adversely modify critical habitat.</p>
National Historic Preservation Act (NHPA)	<ul style="list-style-type: none"> • National Historic Preservation Act of 1966 (NHPA) <p>Leasing is considered an undertaking under Section 106 of the National Historic Preservation Act (NHPA) of 1966. Agencies may follow a phased approach to Section 106 compliance. At the leasing level, existing records reviews and consultation drive identification of historic properties. Class III field inventories are an important part of identification at the lease-development level. See the text of stipulation H-3120-1 for details.</p>

Plan Conformance

It is the policy of the BLM as derived from various laws, including the MLA and the Federal Land Policy and Management Act of 1976 (FLPMA), as amended, to promote the exploration and development of oil and gas on the public domain. Additionally, the Federal Onshore Oil and Gas Leasing Reform Act of 1987 states that lease sales shall be held for each State where eligible lands are available at least quarterly and more frequently if the Secretary of the Interior determines such sales are necessary.

Purchasers of oil and gas lease parcels are required to comply with all applicable federal, state, and local laws and regulations, including obtaining all necessary permits prior to any lease development activities. Stipulations attached to the lease, restrictions deriving from specific, nondiscretionary statutes, and such reasonable measures may be required to minimize adverse impacts to other resource values (43 CFR 3101.1-2).

The statutes, regulations, policies, and plans utilized in preparing this EA include, but are not limited to the following:

Statutes (As Amended)

- Mining and Minerals Policy Act of 1970 (MMPA)
- National Historic Preservation Act of 1966 (NHPA)
- Bald and Golden Eagle Protection Act of 1962 (BGEPA)
- Migratory Bird Treaty Act of 1918 (MBTA)
- Clean Water Act of 1972 (CWA)

Regulations

- 40 CFR Part 93 Subpart E
- 43 CFR 1600
- 43 CFR 3100
- 40 CFR 1500 – 1508
- 40 CFR 104
- 36 CFR 800
- 36CFR 60.4

Manuals²²

- BLM Manual 6840 – Special Status Species
- BLM Manual 3120 – Competitive Leasing
- BLM Manual 6310 - Conducting Wilderness Characteristics Inventory of BLM Lands
- BLM Manual 6320 - Considering Lands with Wilderness Characteristics in the BLM Land Use Planning Process

Handbooks²³

- Competitive Leasing Handbook (H-3120-1)

Policies/Instruction Memoranda (IM)²⁴

- Updating Oil and Gas Leasing Reform – Land Use Planning and Lease Parcel Reviews (WO IM 2018-034)
- Directional Drilling into Federal Mineral Estate from Well Pads on Non-Federal Locations (WO IM 2018-014)
- Oil and Gas Leasing Program NEPA Procedures Pursuant to Leasing Reform (UT IM 2014-006)
- Utah Riparian Management Policy (2006)
- Utah’s Standards for Rangeland Health (1997)
- Utah BLM Drinking Water Source Protection Zone (2010)
- Secretarial Order 3355 Streamlining NEPA (2017)
- Secretarial Memorandum August 6, 2018, Streamlining Environmental Assessments
- Protection of Ground Water Associated with Oil and Gas Leasing, Exploration and Development (BLM UT IM 2010–055)
- BLM Utah Guidance for Lands with Wilderness Characteristics Resource (UT IM 2016-027)
- Updated BLM Sensitive Species Lists for Utah (UT IM 2019-005)
- September 2019 Memorandum from Utah Deputy State Director, Lands and Minerals regarding Preliminary List of Lands for Consideration in the March 2020 Competitive Oil and Gas Lease Sale
- Guidance for Utah BLM to Meet Responsibilities under the Migratory Bird Treaty Act and Executive Order 13186 (UT IM 2017–007)

Agreements

- State Protocol Agreement Between the Utah State Director of the Bureau of Land Management and the Utah State Historic Preservation Office Regarding the Manner in which the BLM Will Meet its Responsibilities Under the National Historic Preservation Act as provided for in the National Programmatic Agreement (January 2020)
- MOU Among the United States Department of Agriculture, the United States Department of Interior and the United States Environmental Protection Agency Regarding Air Quality Analysis and Mitigation for Federal Oil and Gas Decisions through the NEPA Process (2011)

²² BLM manuals can be accessed online at: <https://www.blm.gov/media/blm-policy/manuals>.

²³ BLM handbooks can be accessed online at: <https://www.blm.gov/media/blm-policy/handbooks>.

²⁴ BLM instruction memoranda and information bulletins can be accessed online at: <https://www.blm.gov/media/blm-policy/instruction-memorandum> and <https://www.blm.gov/media/blm-policy/information-bulletin>.

State of Utah Plans/Rules

- Utah Wildlife Action Plan (2015)
- The Utah Oil and Gas Conservation Act (1955)
- The Utah Oil and Gas Conservation General Rules
- The State of Utah Resource Management Plan (State of Utah 2018)

BLM Activity Plans/Strategies/Practices

- T&E Habitat Management Plan (BLM 1990)
- Utah Air Resource Management Strategy (BLM 2018)
- Air Resource Management Program Strategy 2015-2020 (BLM 2015)
- Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development, The Gold Book (BLM 2007)
- Executive Order 13186: Responsibilities of Federal Agencies to Protect Migratory Birds
- Utah Partners in Flight Avian Conservation Strategy Version 2.0 (Parrish et al., 2002)
- Birds of Conservation Concern 2002 (USFWS 2008)
- Moab Field Office Programmatic Invasive Species Management Plan, August 2016

BLM Land Use Plans

- Moab Field Office Record of Decision and Final Resource Management Plan, as amended, Utah. (BLM 2008)
- Moab Master Leasing Plan, Record of Decision and Approved RMP Amendments for Moab and Monticello Field Offices July 2016, (Moab MLP) as maintained, Moab. (BLM 2016)
- Vernal Field Office Record of Decision and Approved RMP as amended, October 2008 (Vernal RMP), Vernal (BLM 2008)
- Price Field Office Record of Decision and Approved RMP as amended October 2008 (Price RMP) (BLM 2008)
- Record of Decision and Final Resource Management Plan. Moab Field Office. Moab, Utah. (BLM 2008)
- Monticello Record of Decision and Approved RMP (BLM 2008) as amended
- Record of Decision and Moab MLP Approved RMP Amendments for Moab and Monticello Field Offices. (BLM 2016)
- Record of Decision (ROD) and Rangeland Program Summary for the Box Elder Resource Management Plan (RMP) (BLM 1986), Minerals Program Decision 3 categorizes all lands in Box Elder County that are available for leasing. The ROD is augmented by the DR prepared for the Box Elder RMP Oil and Gas Supplemental EA (DOI-BLM-UT-020-89-11A) (BLM 1989a) and amended by the DR prepared for the Box Elder Plan Amendment (Acquired Lands) (DOI-BLM-UT-020-94-07) (BLM 1998).
- Record of Decision (ROD) and Rangeland Program Summary for the House Range Resource Area Resource Management Plan (RMP). The ROD is augmented by the DR prepared for the House Range Resource Area RMP Oil and Gas Leasing Implementation Environmental Assessment (UT-050-89-025)
- Record of Decision and Final Resource Management Plan. Richfield Field Office. Richfield, Utah (BLM 2008).

Other NEPA documents and relevant studies that are applicable to this analysis include:

- 2007 Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement and Record of Decision (BLM 2007)
- Utah Greater Sage Grouse Proposed Land Use Plan Amendment and FEIS (BLM, USFS 2015) 2015 Oil and Gas Reasonably Foreseeable Development Scenario for Greater Sage Grouse Occupied Habitat in Utah Sub-region (BLM 2015)
- 2008 Vernal Field Office Proposed RMP/FEIS (BLM 2008)
- Biological Opinion for the Vernal RMP (USFWS 2008)
- 2016 Monument Butte Oil and Gas Development Project EIS (BLM 2016)
- 2017 Vernal Field Office Invasive Plant Management Plan (BLM-UT-G010-2016-011-EA) (BLM 2017)
- Price Field Office Proposed RMP/FEIS (BLM 2008)
- Biological Opinion for the Price RMP (USFWS 2008)
- Moab Field Office Proposed RMP and FEIS (PRMP) (BLM 2008)
- Biological Opinion for the Moab RMP (BLM 2008)
- Monticello Field Office Proposed RMP/FEIS (BLM 2008) as amended
- Biological Opinion for the Monticello Field Office RMP (BLM 2008)
- Moab MLP Final EIS and Proposed RMP Amendment (BLM 2016)
- Biological Opinion for the Moab Master Leasing Plan (BLM 2016)
- Reasonably Foreseeable Development Scenario for Oil and Gas in the Moab MLP Area, Canyon Country District. (BLM 2012)
- Reasonably Foreseeable Development Scenario for Oil and Gas. Moab Field Office. Moab, Utah. (BLM 2005)
- Final Environmental Impact Statement and Proposed Resource Management Plan for the House Range Resource Area (BLM 1989)
- BLM, House Range Resource Area RMP Oil and Gas Leasing Implementation EA (BLM 1989)
- EA for Oil and Gas Leasing in the Fillmore Field Office (BLM 2009)
- 2008 Richfield Field Office Proposed RMP/FEIS (BLM 2008)
- Biological Opinion for the Richfield RMP (BLM 2008)
- Reasonably Foreseeable Development Scenario for Oil and Gas. Richfield Field Office. Richfield, Utah. (BLM 2005)

Development

Development of the parcels under the Proposed Action can be conceived of in three phases and their associated activities: Implementation phase (pad construction, drilling of the well using a conventional pit system or closed-loop system, hydraulically fracturing the well, development of any needed access roads, or expansion of existing roads, installation of pipeline), production phase (vehicle traffic, engines to pump oil if necessary, compressor engines to move gas through a pipeline, venting from storage tanks, hauling produced fluids, regularly monitoring the well, and completing work-over tasks throughout the life of the well if and when necessary), plug and reclamation phase (plugging the well, reclaiming the well pad and other associated disturbances to include access roads and pipelines).

Standard terms, conditions, and stipulations listed would apply as appropriate to each lease. In addition, site specific mitigation measures and best management practices (BMPs) would be attached as Conditions

of Approval (COAs) for each proposed exploration and development activity authorized on a lease. Additional site-specific impacts would be addressed in a subsequent NEPA document at the Application for Permit to Drill (APD) stage. Drilling of wells on a lease would not be permitted until the lease owner or operator secures approval of a drilling permit and a surface use plan of operations as specified under Onshore Oil and Gas Orders (43 CFR 3162), nor until site-specific NEPA analysis is conducted.

Oil and gas leases are issued for a 10-year period and continue for as long thereafter as oil or gas is produced in paying quantities. However, it should be noted that if a leaseholder fails to produce oil and gas, does not make annual rental payments, does not comply with the terms and conditions of the lease, or relinquishes the lease, the lease defaults back to the Federal Government and the lease can be re-offered in another lease sale.

Well Pad and Road Construction

Where the surface is not federally owned, the operator is required to obtain a Surface Access Agreement. Surface Access Agreement is addressed in Onshore Oil and Gas Order No. 1 (O.O. #1.III.D.4).

Equipment for well pad construction could consist of dozers, scrapers, excavators and graders. Disturbance for each well pad could range from 1.0 acre up to 6.8 acres depending on numerous factors such as depth and type of well (vertical, directional, horizontal). 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. All well pads would be reclaimed. During interim and/or final reclamation, disturbed land would be seeded with a mixture (certified weed free) and rate as required by the BLM.

Depending on the locations of the proposed wells, some new or upgraded access roads are anticipated to 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. The location of the wells would not be known until the APD stage.

Well Drilling and Completion Operations

A drilling rig would be transported to the well pad (along with other necessary equipment). Drilling would commence with well spud. Typical drilling operations would include: adding joints of drill pipe at the surface as the hole deepens; circulating drilling fluids to cool the drill bit and remove the drill cuttings; pulling the drill pipe from the hole to replace worn drill bits; and setting strings of casing and cementing them in place. Air and/or water-based drilling fluid may be used to drill the hole. Prior to setting the production casing, open-hole well logs may be run to identify potentially productive horizons. If the evaluation concludes that sufficient natural gas and/or oil are present and recoverable, steel production casing would be installed and cemented in place. Drilling activities on a well would typically occur 24 hours per day, seven days per week, and would require approximately 20 workers. Depending on the depth and complexity of the well, drilling could last from a few days to one week.

Once a well has been drilled and evaluated to have sufficient oil and/or natural gas, completion operations would begin. Well completion involves perforating the production casing in target zones, followed by hydraulic fracturing (also known as, fracking) of the formation (see below for more information on

hydraulic fracturing). The next phase of completion would be to flow and test the well to determine rates of production.

Typical equipment and vehicles used during completion activities might include carbon dioxide tanker trucks; sand transport trucks; water trucks; oil service trucks used to transport pumps and equipment for fracking; flat beds and gin trucks to move water tanks, rigs, tubing, and fracking chemicals; logging trucks (cased hole wireline trucks); pickup trucks to haul personnel and miscellaneous small materials; and workover rigs.

Completion activities on individual wells may occur 24 hours per day, seven days per week, and would require approximately 20 to 40 workers. Completion of an individual well could take from 7 to 30 days, depending on the number of completion zones.

Hydraulic Fracturing

Hydraulic fracturing (also known as fracking) is a well stimulation technique used to increase oil and gas production from underground rock formations. Fracking would also 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 fracking process that could potentially be implemented if development were to occur, including well construction information and general conditions encountered.

Fracking 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. 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.

Fracking 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. Fracking is still used in these settings, but the process has evolved. Technological developments (including horizontal drilling) have led to the use of fracking 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 fracking 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. The amount of risk of groundwater contamination is based on site specific geologic factors and fracking procedures. The Environmental Protection Agency (EPA) recently conducted an assessment of fracking on drinking water resources (<https://www.epa.gov/hfstudy>) [EPA 2016]. Potential for groundwater contamination as a result of fracking is explained in further detail in this report. Proper horizontal and vertical separation and flow boundaries must exist. The risk and potential for contamination is dependent proper understanding of site specific subsurface geology. Hydraulic fracturing plans are submitted and reviewed at the APD stage. Presently, there are no unconventional reservoirs that are being exploited using high-volume water based hydraulic fracturing techniques.

Production Operations

If wells were to go into production, facilities would be located at the well pad and typically include a well head, two storage tanks, a truck load-out, separator, and dehydrator. 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., covert 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, 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. BLM Best Management Practices (BMPs), such as burying the pipeline and/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 (United States Department of the Interior and United States Department of Agriculture 2007). 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. The Gold Book includes environmental BMPs designed to provide for safe and efficient operations while minimizing undesirable impacts to the environment.

Exploration and development on split-estate lands are 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.

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 for enhanced recovery. Handling of produced water is addressed in Onshore Oil and Gas Order No. 7.

Most injection wells do not cause earthquakes. In the United States, there is approximately 35,000 active waste-water disposal wells, 80,000 active enhanced oil-recovery wells, and tens of thousands of wells, and tens of thousands of wells are hydraulically fractured every year in the United States. The earthquake rate increased in Oklahoma, southern Kansas, central Arkansas, and multiple parts of Texas (Rubinstein 2015). In Utah, the volumes are lower than those states experiencing induced seismicity. Also, the geology is different than those states experiencing induced seismicity. The injection zones are stratigraphically thousands of feet above the basement rock that may contain large unknown faults. Therefore, at this time it appears that induced seismicity from water injection is not a problem in the oil fields of Utah (BLM 2018).

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.

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.

Appendix H – Comments and Responses on the postponed June Parcels

As defined in the NEPA Handbook (page 40), “an ‘issue’ is a point of disagreement, debate, or dispute with a proposed action based on some anticipated environmental effect. An issue is more than just a position statement, such as disagreement with grazing on public lands. An issue:

- Has a cause and effect relationship with the proposed action or alternatives;
- Is within the scope of the analysis;
- Has not been decided by law, regulation, or previous decision; and
- Is amenable to scientific analysis rather than conjecture.”

Comments that express a professional disagreement with the conclusions of the analysis or assert that the analysis is inadequate may or may not lead to changes in the EA. Substantive comments and non-substantive comments are defined in the NEPA Handbook, H-1790-1, and section 6.9.2. The BLM National Environmental Handbook (H-1790-1) states that substantive comments do one or more of the following:

- Question, with reasonable basis the accuracy of information in the EIS or EA
- Question, with reasonable basis, the adequacy of methodology for, or assumptions used for the environmental analysis
- Present new information relevant to the analysis
- Present reasonable alternatives other than those analyzed in the EIS or EA
- Cause changes or revisions in one or more of the alternatives.

Comments that are not substantive or comments received after the close of the public comment period may not receive a response. Six comments were received. Due to the length, the BLM has summarized the comments of Southern Utah Wilderness Alliance (SUWA) and Outdoor Alliance. Those two documents, in its entirety, are posted on ePlanning.

All comments received will be incorporated fully into Appendix H. Note: paragraph numbering was added.

June 2020

Parcel 001 renumbered to
Parcel 002 renumbered to
Parcel 013 renumbered to
Parcel 014 renumbered to

September 2020

Parcel 133
Parcel 134
Parcel 135
Parcel 136

The BLM has deferred all parcels located within the Moab Field Office. This includes the 4 parcels from the June Lease Sale.

Comment Number	Commenter	Comment	Response
1.	SUWA	<p>The Lease Sale EA failed to analyze all site-specific direct and indirect impacts... Reasonably foreseeable indirect impacts cannot be deferred to the Application for Permit to Drill (APD) stage because at that stage “the ‘No Action Alternative’ is no longer on the table with respect to the non-NSO leases.” <i>Ctr. for Biological Diversity v. U.S. Forest Serv.</i>, Case No. 2:17- cv-372, at *29 (E.D. Ohio March 13, 2020) (attached). As the court in <i>Center for Biological Diversity</i> stated when it recently rejected a similar attempt by the Forest Service to postpone its NEPA “hard look” obligation to the APD stage:</p> <p style="padding-left: 40px;">Defendants’ decision not to conduct further review . . . was based on the assumption that there was no significant impact at the leasing stage because no surface disturbing activities [at the time of lease issuance] would occur. But this Court joins other courts in finding that this conclusion “fell short of NEPA’s requirements with respect to leases lacking NSO stipulations . . . because at the leasing stage ‘the agency made an irrevocable commitment to allow some surface disturbing activities,’ and it was therefore required to analyze those activities before it could no longer preclude them...</p>	<p>To clarify, during the NEPA process BLM analyzes <i>the proposed action</i> and <i>alternatives</i>. The analysis <i>identifies</i> impacts to resources that may result from the proposed action. BLM presumes that SUWA means to say that “BLM didn’t conduct site-specific analysis to identify impacts from the proposed action.”</p> <p>The commenter commences it’s discussion by attempting to equate the terms “site-specific” impacts with “reasonably foreseeable impacts” Site specific impacts are not the same as reasonably foreseeable impacts. Reasonably foreseeable impacts are those derived in the absence of a site-specific proposal, such as a planning or programmatic document. Leasing is not a site-specific proposal. The BLM can review parcels proposed for lease for potential resource conflicts and address the conflicts by attaching lease stipulations and notices, but any analysis it conducts would be reasonably foreseeable, not site specific. Indeed, in <i>WildEarth Guardians v. Zinke</i>, the court stated (BLM Need Not Conduct Site-Specific Assessments at the Leasing Stage (368 F. Supp. 3d at 66)):</p> <p style="padding-left: 40px;">At the leasing stage, BLM could not reasonably foresee the projects to be undertaken on specific leased parcels, nor could it evaluate the impacts of those projects on a parcel-by-parcel basis. As the EAs explain, BLM did not know “whether or not [a given] lease would be explored or developed.” AR3426. And even if BLM assumed that a given lease would be developed, it could not know the resource to be extracted from the lease—oil or gas—the type of wells to be drilled,</p>

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		<p>Lease issuance is the “point of no return” (i.e., the point at which time BLM makes an irrevocable commitment of resources) for purposes of NEPA analysis. <i>WildEarth Guardians v. Zinke</i>, 368 F. Supp. 3d 41, 66 (D.D.C. 2019). BLM itself identifies lease issuance as the point of irrevocable commitment of resources: The BLM has a statutory responsibility under NEPA to analyze and document the direct, indirect and cumulative impacts of past, present and reasonably foreseeable future actions resulting from Federally authorized fluid minerals activities. By law, these impacts must be analyzed before the agency makes an irreversible commitment. In the fluid minerals program, this commitment occurs at the point of lease issuance. BLM, H – 1624-1 – Planning for Fluid Mineral Resources § I.B.2, at I-2 (Jan. 28, 2013) (emphasis added) (BLM Handbook 1624) (attached).¹ It is at this point that BLM must analyze all direct, indirect, and cumulative impacts of its leasing decision. See, e.g., <i>WildEarth Guardians</i>, 368 F. Supp. 3d at 65-66; see also 40 C.F.R. §§ 1508.7, 1507.8.</p>	<p>and the technology that would be used to drill those wells. See AR11957; AR35366. NEPA does not require an agency to issue these types of wholly speculative assessments at the leasing stage, even assuming an irrevocable commitment of resources.</p> <p>Thus, in the context of a lease sale, “site-specific” documents are those resulting from a more focused review, but the impacts are still “reasonably foreseeable.” The planning and programmatic EISs prepared to analyze proposed resource management plans (RMPs) and their amendments identify the reasonably foreseeable impacts to resources that may occur from oil and gas development. To mitigate the impacts from opening lands to leasing and subsequent development, Lease Stipulations are developed as part of the RMPs.</p> <p>Whereas the decision to open lands to leasing is not an irrevocable commitment of resources, implementing the decision is. As such, when the BLM incrementally implements the RMP decision by proposing to lease specific parcels, its resource specialists review the area <i>potentially</i> affected to determine if there is new information or circumstances, and if there is, if it would substantially change the analysis in the planning documents (keeping in consideration the lease stipulations), and if the reasonably foreseeable impacts are similar both quantitatively and qualitatively to those identified in the programmatic documents, again, keeping in consideration the lease stipulations. If the resource specialists determine no further analysis is necessary they document their finding in the Interdisciplinary Checklist, (Attachment D of the EA). If they determine more analysis is necessary, the reasonably foreseeable impacts are further analyzed in the leasing EA.</p>
2.	SUWA	<p>BLM has unlawfully postponed meaningful NEPA analysis for the majority of resources to the APD stage...Reasonably foreseeable indirect impacts cannot be deferred to the Application for Permit to Drill (APD) stage because at that stage “the ‘No Action Alternative’ is no longer on the table with respect to the non-NSO leases.” <i>Ctr. for Biological Diversity v. U.S. Forest Serv.</i>, Case No. 2:17- cv-372, at *29 (E.D. Ohio March 13, 2020) (attached). As the court in <i>Center for Biological Diversity</i> stated when it recently rejected a similar attempt by the Forest Service to postpone its NEPA “hard look” obligation to the APD stage:</p> <p style="padding-left: 40px;">Defendants’ decision not to conduct further review . . . was based on the assumption that there was no significant impact at the leasing stage because no surface disturbing activities [at the time of lease issuance] would occur. But this Court joins other courts in finding that this conclusion “fell short of NEPA’s requirements with respect to leases lacking NSO stipulations . . . because at the leasing stage ‘the agency made an irrevocable commitment to allow some surface disturbing activities,’ and it was therefore required to analyze those activities before it could no longer preclude them. Id. at *30-31 (internal citations and alterations omitted).</p>	<p>The referenced decision was due to a complaint that the NEPA documents prepared for Wayne National Forest Plan in Ohio were prepared prior to the development of “economically viable methods of accessing the oil and gas in the (Marcellus and Utica) shale” .” <i>Ctr. for Biological Diversity v. U.S. Forest Serv.</i>, Case No. 2:17- cv-372, at *11. The court found, in that case, that “BLM and USFS failed to take sufficiently hard looks at certain aspects of fracking.” Id at *70. However, the court focused on the question of “ whether all foreseeable impacts of leasing had been taken into account before leasing could proceed.” The response to comment #1 addresses the BLM’s review to determine if all reasonably foreseeable impacts have been taken into account, and it’s rationale for not being able to identify site-specific impacts until there is a site specific development proposal.</p>
3.	SUWA	<p>Importantly, the IDT Checklist does not contain NEPA analysis but instead contains BLM’s explanation for why such NEPA analysis is not warranted.</p> <p>Lease stipulations and notices (and their accompanying mitigation measures) do not constitute NEPA analyses. Thus, even though BLM has attached them to the leases at issue, this does not excuse the agency from its separate legal obligation to take a “hard look” at the potential impacts of its leasing decisions.</p>	See comment response 1.
4.	SUWA	<p>The BLM acknowledges, in the EA, that oil and gas leasing and development will impact resources other than air quality and climate, further highlighting the arbitrariness of BLM’s decision to postpone analysis until the APD stage. For instance, BLM notes that “multiple parcels contain[] sensitive habitat for game species such as elk, mule deer, or pronghorn antelope. . . . the proposed lease sale has the potential to impact habitat through future oil and gas development.” EA at 11. BLM also notes that migratory birds and raptors are known to</p>	See comment response 1.

Comment Number	Commenter	Comment	Response
		exist on “every parcel in the sale” and also that development has the potential to impact riparian areas, surface and ground water. See id. at 12, 14-16. However, BLM then entirely fails to analyze the impacts to those resources in the EA. When indirect effects are reasonably foreseeable BLM must analyze them prior to making an irretrievable commitment of resource, as explained in the recent decision in Center for Biological Diversity.	
5.	SUWA	The Lease Sale EA failed to analyze all cumulative impacts of oil and gas leasing and development. In the Lease Sale EA, BLM attempted to analyze the cumulative impacts of only two resource values: air quality and GHG emissions and climate change. However, these are not the only resources that may be impacted by past, present, and reasonably foreseeable actions. BLM’s failure to analyze at the lease sale stage the full suite of potential resources affected by oil and gas leasing and development violated NEPA.	See comment response 1 and 2. BLM identified reasonably foreseeable impacts in the EISs prepared for the MbFO RMP and the Moab Master Leasing Plan. Upon review of the parcels and those EISs, BLM resource specialists determined that two issues, Air Quality and Greenhouse Gas/Climate Change required supplemental analysis to identify additional reasonably foreseeable impacts.
6.	SUWA	<p>The Tenth Circuit Court of Appeals has held that the preparation of a reasonably foreseeable development scenario (“RFDS”) makes it reasonably foreseeable that the number of wells identified therein will be drilled, and NEPA therefore requires BLM to consider the cumulative impacts of those wells in its site-specific NEPA analysis for a project that falls within the same area encompassed by the RFDS. In the present case, BLM makes the same mistake. BLM has prepared two RFDSs for the Moab field office. This includes:</p> <ul style="list-style-type: none"> • The RFDS prepared as part of the 2008 Moab field office resource management plan (Moab RMP RFDS). See generally BLM, Reasonably Foreseeable Development Scenario for Oil and Gas, Moab Field Office (2005) (attached). • The RFDS prepared as part of the 2016 Moab Master Leasing Plan (Moab MLP RFDS). See generally BLM, Reasonably Foreseeable Development Scenario for Oil and Gas in the Moab Master Leasing Plan Area, Canyon Country District (Aug. 2012) (attached). <p>The Moab RMP RFDS anticipated the drilling of 390 wells over a 15-year period. See Moab RMP RFDS at 1. Based on this level of development BLM concluded that 5,580 acres of surface disturbance would occur during that time period. In the Moab MLP RFDS, BLM anticipated the drilling of 128 wells over a 15-year period. See Moab MLP RFDS at 1. This development would result in approximately 1,050 acres of surface disturbance.</p> <p>In the Lease Sale EA, BLM failed to analyze the cumulative impacts of the wells anticipated in these RFDSs—wells the Tenth Circuit has held are “reasonably foreseeable future actions.” Instead, BLM analyzed the cumulative impacts of only 4 wells. See EA at 19, tbl. 4; EA, App. G. This inappropriately narrow cumulative impacts analysis violates NEPA. By limiting its analysis in this manner BLM failed to analyze all reasonably foreseeable impacts to the following resources, among others:</p> <ul style="list-style-type: none"> • Air quality; • Climate change; • Wildlife and plants (e.g., elk, mule deer, pronghorn antelope); • Visual resources; 	<p>In order to analyze impacts from potential development, the BLM extrapolates the RFDS’s prepared for the RMP and other EIS’s to determine the number of wells to use in the assumptions for analysis, or RFD, for the parcels. The “4 wells” SUWA references was used to analyze indirect impacts from leasing, not cumulative impacts. BLM resource specialists reviewed the parcels and the analysis in the EISs to determine if all reasonably foreseeable impacts were identified in therein.</p> <p>As far as NEPA requiring “BLM to consider the cumulative impacts of those wells in its site-specific NEPA analysis for a project that falls within the same area encompassed by the RFDS.” First a leasing EA does not conduct site-specific analysis (See the response to comment #1). Second, the commenter implies that the number wells in the two RFDSs are additive in a cumulative impact analysis with a Cumulative Impact Analysis Area (CIAA) that spans both planning areas. That is not the case. The number of wells in the MbFO and Monticello Field Office RFDS would be reduced by the number of wells in the MLP RFDS, less the number of wells drilled in the MLP area drilled since implementation of the RMPs. However few resources would have a large enough CIAA to consider that many wells in the cumulative impact analysis, and even for those resources, the number of reasonably foreseeable wells is not necessarily the best metric to use for cumulative impact analysis.</p>

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		<ul style="list-style-type: none"> Water quality and quantity including the amount of water required during development of the leases (e.g., horizontal, directional, and vertical drilling), how that water will be obtained (and the effects from the drawdown of groundwater resources), and hydraulic fracturing operations; and Cultural and archaeological resources. 	
7.	SUWA	<p>Moreover, in Southern Utah Wilderness Alliance, the Interior Board of Land Appeals (Board) held that BLM violated NEPA when it failed to analyze reasonably foreseeable cumulative impacts to migratory birds prior to approving a vegetation treatment project located in Grand Staircase-Escalante National Monument. See generally IBLA No. 2019-94, at *4-7 (Sept. 16, 2019) (attached). The Board held that BLM was aware of other proposals for public lands near the proposed action that would also impact migratory birds and thus violated NEPA by not analyzing those projects when viewed with the proposed action. Id. at *6-7. The Board’s holding on this point does not tread new legal ground but instead is in accordance with well-established law. See, e.g., WildEarth Guardians, 368 F. Supp. 3d at 76-78; Diné CARE, 923 F.3d at 853.</p> <p>In the present case, BLM is likewise aware of other past, present, and future oil and gas leasing and development proposals in the same areas at issue in the Lease Sale EA—activities that will impact the same resources values. For example:</p> <ul style="list-style-type: none"> Utah BLM’s March 2018, September 2018, December 2018, September 2019, December 2019 lease sales included lease parcels immediately adjacent to and near the June 2020 leases in the Canyon Country District. See generally SUWA Map –BLM’s Piecemealed Leasing in Grand County (attached). The Utah School Institutional Trust Lands Administration (SITLA) also issued leases in this same area during that time period. BLM has received hundreds of expressions of interests (EOIs) for BLM-managed lands in these same areas, which based on current agency policy and practice will be offered for sale at BLM’s upcoming September 2020 lease sale. <p>Nonetheless, BLM failed to analyze all cumulative impacts of the June 2020 lease sale, when viewed together with these other sales. Instead, as discussed above, BLM attempted to analyze impacts to air quality and climate only and provided arbitrary rationales for having not analyzed impacts to more resources—resources that will be impacted by development in these areas.</p>	<p>In the case of this EA, BLM is not arguing that the projects the commenter lists are not “past, present, or reasonably foreseeable” actions to consider in a cumulative impact analysis. Rather, BLM’s position is that most of the reasonably foreseeable impacts of those projects were identified in the EISs prepared for the MbFO RMP and the Moab MLP. An EIS prepared for a Land Use Plan is essentially a cumulative impact analysis of the reasonably foreseeable impacts of development of the lands proposed to be designated as open to leasing.</p>
8.	SUWA	<p>In the Lease Sale EA, BLM did not analyze impacts to water resources. BLM’s proffered rationales are arbitrary. The issuance of a non-NSO lease is the point at which BLM commits to proceed down the path to development (i.e., irretrievable commitment of resources). Thus, in the NEPA context, it is immaterial whether BLM will—or will not—analyze site-specific impacts at the APD stage, has attached lease stipulations and notices, and will follow BMPs when authorizing future development on the leases. That is not what NEPA asks of the agency. Instead, “assessment of all ‘reasonably foreseeable’ impacts must occur at the earliest practicable point, and must take place before an ‘irretrievable commitment of resources’ is made.” New Mexico ex rel. Richardson, 565 F.3d at 718 (citations omitted). Because impacts to water resources are reasonably foreseeable, as acknowledged by BLM itself, the agency</p>	<p>See comment response 1</p>

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		must analyze those impacts and disclose them to the public, to satisfy BLM's informed decision-making mandate.	
9.	SUWA	<p>In the Lease Sale EA, BLM repeated these same mistakes with regard to wildlife species. This includes, but is not limited to, the agency's consideration of impacts to elk, mule deer, pronghorn antelope burrowing owl, and threatened and endangered species such as California Condor, Mexican Spotted-Owl, Southwestern Willow Flycatcher, Yellow-billed Cuckoo, and the four Colorado River endangered fish species. See EA, App. D at 109-111 (listing these threatened and endangered species as present—or potentially impacted—by leasing and development), 111-113 (same but for sensitive wildlife species), 113-114 (same but for non-ESA listed wildlife).</p> <p>For each of these resources, BLM provided the same rationale for not having analyzed potential impacts as provided to justify its decision to forego analysis to water resources, i.e., that at the APD stage the agency will—allegedly—analyze site-specific impacts and that lease stipulations and BMPs have been attached or will be required at the APD stage. See, e.g., EA at 10, tbl. 3</p> <p>(citing lease stipulations and notices, and BMPs, regarding threatened and endangered species); id. at 10-11 (same but for sensitive wildlife species); EA, App. D at 109-114 (IDT Checklist regarding threatened and endangered species, sensitive wildlife species, and non-ESA listed wildlife: same). As detailed above, these rationales violate NEPA.</p> <p>As the court in <i>Center for Biological Diversity</i>, explained when it rejected similar rationales posited by the Forest Service, NEPA requires the agency to analyze all reasonably foreseeable impacts at the earliest practicable point because “at the APD stage, the ‘No Action Alternative’ is no longer on the table with respect to the non-NSO leases.” Case No. 2:17-cv-372, at *29. For this same reason, the Tenth Circuit has explained, “assessment of all ‘reasonably foreseeable’ impacts must occur at the earliest practicable point, and must take place before an ‘irretrievable commitment of resources’ is made.” <i>New Mexico ex rel. Richardson</i>, 565 F.3d at 718 (citations omitted). In the oil and gas leasing context, the issuance of a non-NSO lease “constitutes such a commitment.” Id. “Because BLM [cannot] prevent the impacts resulting from surface use after a lease [is] issued, it [is] required to analyze any foreseeable impacts of such use before committing the resources.” Id.</p> <p>Therefore, BLM's decision to postpone meaningful analysis to the APD stage violates NEPA.</p>	See comment response 1
10.	SUWA	<p>BLM's cumulative impact analysis for GHG emissions and climate lacks necessary information and data. In <i>WildEarth Guardians</i>, the court stated: [NEPA] does . . . require that BLM quantify the emissions from each leasing decision—past, present, or reasonably foreseeable—and compare those emissions to regional and national emissions, setting forth with reasonable specificity the cumulative effect of the leasing decisions at issue. To the extent other BLM actions in the region—such as other lease sales—are reasonably foreseeable when an EA is issued, BLM must discuss them as well . . . Although BLM may determine that each lease sale individually has a de minimis impact on climate change, the agency must also consider the cumulative impact of GHG emissions generated by past, present, or reasonably foreseeable BLM lease sales in the region and nation. 368 F. Supp. 3d at 77 (internal citations omitted). The Lease Sale EA does not meet this standard.</p>	<p>The EA complies with the court standards that SUWA references. Specifically, the EA quantifies leasing emissions at the local and state level for existing oil and gas wells (past actions, page 35), for the current lease sales (present action, page 37), and for future lease sales (foreseeable, pages 41-42). Additionally, the EA incorporates by reference regional and national past, present, and foreseeable leasing emissions estimates from the USGS Federal Fossil Fuel GHG emissions report (USGS 2018) (page 35) and the BLM's Greenhouse Gas and Climate Change Report (Golder 2017) (page 43). These emissions are then compared to emissions scenarios for the Representative Concentration Pathways (page 43) that are used to produce climate change projections (pages 43-45).</p> <p>The EA clearly states that the CIAA for GHG emissions “occurs on various scales (local, state, national, and global),” see Section 3.3.2.4 (page 40). While the EA primarily discusses local impacts that are most meaningful to the local public and decisionmakers, it also recognizes that climate impacts occur elsewhere. The AGGI (page</p>

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		<p>Here, BLM’s designated CIAA for climate analysis in the Lease Sale EA is limited to “the state and regional level since the public tends to experience the impacts and adaptation at a local level.” EA at 39. This CIAA is arbitrary. BLM knows that climate impacts will result outside of Utah and the regional level¹⁰ from the proposed sale alone, or when viewed together with other lease sales throughout the country. See, e.g., EA at 42 (stating that a single action such as an oil and gas lease sale “contributes, on a relative basis, to global emissions and long-term climate impacts”); id. at 44 (“The proposed action may result in GHG emissions that contribute to statewide, regional, and national GHG emissions totals”). For this reason, in past leasing EAs BLM has properly established its CIAA for climate analysis as “the State of Utah, the United States, and the globe.” BLM, Environmental Assessment, December 2018 Competitive Oil and Gas Lease Sale, DOI-BLM-UT-G010-2018-0044-EA at 41 (Sept. 2018) (excerpts attached). Such a broad CIAA is consistent with BLM’s guidance which states that the CIAA “is generally based on the natural boundaries of the resource affected, rather than jurisdictional boundaries.” NEPA Handbook § 6.8.3.2, pg. 58.</p>	<p>36) provides a measure of the relative amount of global warming that occurs from GHG emissions and the EA summarizes regional impacts contained in the NCA4 (page 37). The EA was updated (page 45) to clarify that climate impacts occur at all scales.</p>
11.	SUWA	<p>Second, the EA arbitrarily relies solely on the 100-year global warming potential (GWP) of CO₂ and CH₄. See EA at 33, tbl. 9. However, the EA does not fully consider the more representative 20-year GWP when analyzing climate impacts, which must be considered along with the 100-year GWP to inform BLM’s decision, including its significance determination. See, e.g., <i>W. Org. of Res. Councils v. U.S. Bureau of Land Mgmt.</i>, 2018 WL 1475470, at *18 (D. Mont. 2018) (“BLM violated NEPA where it failed to justify its use of GWPs based on a 100-year time horizon rather than the 20-year time horizon”). See also 40 C.F.R. § 1502.1 (requiring a “full and fair discussion of significant environmental impacts”); id. § 1500.1(b) (“Accurate scientific analysis” proves “essential to implementing NEPA”); id. § 1508.27(a) (NEPA finds relevant “both short- and long-term effects”). As SUWA has previously explained, BLM must disclose the true magnitude of methane pollution of an oil and gas leasing proposal.</p>	<p>The BLM states in Section 3.3.2.1 (page 33) why the 100-year GWP is used in the EA. Both the United Nations Framework Convention on Climate Change and the EPA (40 CFR Part 98, Subpart A, Table A-1) use the 100-year GWP and the use of the 100-year GPW in the EA allows for direct comparison to emissions inventories reported by these agencies. Additionally, when CO₂ is the primary GHG emitted there is essentially no difference between the 20-year and 100-year GWP’s. During the combustion process, methane in produced oil or gas is converted to CO₂ which means there is no substantial difference between the 20-year and 100-year GWP. In this EA, the BLM reports the 20-year GWP when there are substantial amounts of non-CO₂ gasses, such as fugitive leaks of methane occurring during well operation activities. Section 3.3.2.2 (page 37) lists the 20-year GWP for well construction (12,823 MT CO₂e) and well operations (18,446 MT CO₂e) as well as the 100-year GWP for the public and decision maker to compare. Lastly, climate models and the RCP emissions scenarios include methane and other non-CO₂ gases such that including the 20-year GWP in the EA would not change the model projected environmental impacts included on pages 44-45.</p>
12.	SUWA	<p>Third, BLM’s cumulative impacts analysis is based on a statewide total of 9,559 reasonably foreseeable oil and gas wells. See EA at 40, tbl. 16. This is not an accurate number of anticipated oil and gas wells. For example, BLM overlooks that in 2012 the agency prepared a RFDS for the Uinta Basin that anticipated the drilling of 28,417 wells over a 15-year period. See BLM, Greater Uinta Basin Oil and Gas Cumulative Impacts Technical Support Document, at 10, tbl. 3-2 BLM has provided no explanation for why it has not relied on the agency’s most current RFDSs. This lack of explanation and reliance on outdated data and information is arbitrary.</p>	<p>First, a cumulative impact analysis is based on past, present and reasonably foreseeable actions. The 9559 wells (actions) in Table 16 represent all three conditions for the State of Utah. The number in Table 17, 5484, discloses the reasonably foreseeable wells.</p> <p>Second, the referenced Technical Support Document (TSD) is not a Reasonably Foreseeable Development Scenario (RFDS), which is a tool prepared to provide an assumption for analysis in Land Use Planning. This document was not prepared in accordance with Handbook 3031, Handbook 1624 Planning for Fluid Mineral Resources, or WO Instruction Memorandum 2004-0089 Policy for Reasonably Foreseeable Development (RFD)¹ Scenario for Oil and Gas. To the contrary, the TSD itself specifies that “Data presented in this document account for the use of pad drilling to more accurately estimate levels of surface disturbance. This document is not a new RFD[S] for the Vernal RMP because it does not project future oil and gas development potential, and because it includes information adjacent to but outside of the Vernal Planning Area” (page 2). However, the terms “Reasonably Foreseeable Development” or “Reasonably Foreseeable Development Scenario” tend to be used loosely to describe assumptions for analysis, as was done in Vernal RMP’s five-year review on pages 5, 10, 19, 36, and 37.</p> <p>The TSD was a snapshot of the reasonably foreseeable future number of wells as of August 2011, during a “boom” cycle for the oil and gas industry. The numbers were used in the 2014 Air Resources Management Study, and several NEPA documents, however later in 2014 the oil and gas industry went into a “bust” cycle. Several projects considered in the TSD have since been dropped and are no longer reasonably foreseeable actions to be considered in a cumulative impact analysis. The dropped projects include:</p>

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			<ul style="list-style-type: none"> • Enduring Resource’s Big Pack EA (664 wells) (Bureau of Land Management Vernal Field Office, 2008), • XTO’s Little Canyon EA (510 wells) (Bureau of Land Management Vernal Field Office, 2008a), • Enduring Resource’s Southam Canyon EA (249 wells) (Bureau of Land Management Vernal Field Office, 2008c), • XTO’s Hill Creek Unit EA (137 wells) (Bureau of Land Management Vernal Field Office, 2009 unpublished data), • Uintah and Ouray Tribal Oil and Gas EIS (4,899 wells) (Bureau of Indian Affairs, 2010), and • Greater Chapita Wells EIS Proposed Action (7,000 wells) (Bureau of Land Management Vernal Field Office, February 8, 2017). <p>In addition, the number of wells in the following projects have been reduced since the TDS was developed:</p> <ul style="list-style-type: none"> • XTO River Bend EA 2013 Decision Record permitted 200 wells, instead of the 484 Proposed Action wells included in the TSD (Bureau of Land Management Vernal Field Office, 2013). Also note that as of August 2019, no wells have been drilled under this EA. • Gasco Final EIS Record of Decision permitted 1,298 wells, instead of the 1,491 Proposed Action wells included in the TSD (Bureau of Land Management Vernal Field Office, 2012c). Also note that as of August 2019, only 4 wells have been drilled and 16 wells have been permitted under this EIS. <p>One project has increased its numbers over those accounted for in the model:</p> <ul style="list-style-type: none"> • EOG’s 22 well North Alger EA was acquired by Koch and the new NEPA decision contains 124 natural gas wells (Bureau of Land Management, 2013). Also note that as of August 2019, no wells have been drilled under this EA. <p>Only two new large development proposals have been reviewed or received by the BLM VFO since 2011:</p> <ul style="list-style-type: none"> • In 2015, the BLM completed the Koch Wild Horse Bench EA, 135 wells (Bureau of Land Management, 2015a). Also note that as of August 2019, no wells have been drilled under this EA. • In 2016, the BLM published a Notice of Intent for the Crescent Point Federal-Tribal EIS, a project that proposed up to 3,925 new wells (Bureau of Land Management Vernal Field Office, 2016a). This project has since been cancelled by the proponent, so no new wells will occur. <p>In all, of the 25,721 wells “foreseen” by the TSD, 13,213 have been dropped by the proponent (Big Pack, Little Canyon, Hill Creek, Tribal EIS, and Chapita), 477 have been rejected by the BLM (XTO River Bend 282 of the total proposed action and Gasco 193 of the total proposed action), and two were approved by the BLM but not implemented by the proponent to the level expected (XTO Riverbend and Gasco). As a result of these overall reductions in foreseeable wells, -28,417 wells projection from the TSD is simply no longer a valid metric to use for analysis and is more than double all the producing oil and gas wells currently in the State of Utah. A more reasonable metric would be the number of wells projected in the RFDS and the four development plans requiring EISs since the RMP was approved, less the number of wells drilled since the RMP was approved. That number is 14,448 including 486 wells currently being processed under APDs. If those APDs were considered “present” actions, the number of reasonably foreseeable wells for the Vernal Field Office (VFO) at this point in time would be 13,962.</p> <p>The commenter states that the TSD projected the 25,721 wells would be drilled over the subsequent 15 years, however since the TSD was not an RFDS, there was no timeline and the assertion is incorrect. Spreading the current number of reasonably foreseeable wells out over the next 30 years, an average of 465 wells a year would have to be drilled in the VFO to ultimately drill 13,962. Given past boom and busts cycles this number is a reasonable annual estimate. There are currently three years left in the 15 year temporal projection for the Vernal RMP RFDS; 465 times 3 is equal to 1,395. Add that number to 486 APDs, and the 3205 wells drilled since the approval of the RMP, the resulting 5,086 wells is still well below the 6530 projected in the RFDS. If the time frame for the RFDSs for the Vernal and all other planning areas in the State were projected out another three years</p>

Comment Number	Commenter	Comment	Response
			until 2026, another 1395 wells could be added in for a total of 2,790 reasonably foreseeable wells. When added to 5086 the resulting 6481 wells is still 99 wells less than the 6530 projected in the RFDS. 2889 is VFOs contribution to the 5,484 wells projected in Table 17 of the EA. Using a six year temporal span for the cumulative impact analysis, 5484 wells probably substantially over-estimates the number of wells to be drilled, given that 172 wells were drilled statewide in 2018. If that trend carries for the next six years, only 1,032 wells would be drilled statewide. If the average number of wells drilled in the State from 2004 to 2018, 697 wells, is projected over the next six years, the number would be 4182.
13.	SUWA	<p>Moreover, BLM's cumulative impacts analysis must also include, among other actions:</p> <ul style="list-style-type: none"> • Leases offered and sold by SITLA. • Utah BLM's leasing over the past years and decades, and its upcoming September 2020 lease sale. • BLM's leasing outside of Utah, including past sales, other sales presently proposed, and upcoming 2020 leasing (and beyond). • EOIs BLM has received for this area (and others in Utah) that, under current policy and practice, will almost certainly be offered for sale. 	See the response to comment 1. When an RFDS is prepared to use in the analysis of a Land Use Plan, it takes into consideration all wells in the planning area, not just wells on Federal surface and minerals. In addition, cumulative impact analysis is not based on the number of leases or acreage leased, but on the RFDS.
14.	SUWA	BLM must analyze and disclose the impacts of these actions including the incremental GHG emissions increases, added to other past, present, and reasonably foreseeable fossil fuel extraction emissions on a regional and national scale. See 40 C.F.R. §§ 1508.7, 1508.27(a). BLM must complete a comprehensive cumulative impacts analysis that compares GHG emissions from the lease parcels to emissions from other BLM-managed projects in this region and across the country. Similarly, here, BLM must analyze and disclose to the public the cumulative GHG emissions from similar, collectively significant oil and gas lease sales within Utah, as well as throughout the Rocky Mountain West, and nationally. Similarly, here, BLM must analyze and disclose to the public the cumulative GHG emissions from similar, collectively significant oil and gas lease sales within Utah, as well as throughout the Rocky Mountain West, and nationally. Here, BLM failed to analyze and disclose the emissions and climate impacts of these wells when added to the emissions resulting from other past, present, or reasonably foreseeable actions, in violation of NEPA. Without considering "the combined effects" of such management, the agency cannot make an informed decision "whether, or how, to alter" the plans "to lessen cumulative impacts."	See the response to comment 11. The EA was also updated on page 41 to include emissions projections based on U.S. Energy Information Administration oil and gas production growth estimates (EIA 2020).
15.	SUWA	BLM failed to analyze and disclose the significance of the proposed action on climate. In the Lease Sale EA, BLM again defers analysis and disclosure of the significance of its actions on climate, instead, stating as follows: "Emissions estimates themselves are presented for disclosure purposes and as a proxy for impacts from the proposed action. Emissions can be compared to annual emissions from other sources in the state to provide a measure of the relative impact." BLM then provides estimated total GHG emissions from construction, operations, and combustion from development on the parcels, and provides a comparison of cumulative annual emissions. CEQ has explicitly addressed the inappropriateness of an agency's assertion that the emissions resulting from its actions represent only a small fraction of global emissions in order to avoid analysis and disclosure of climate impacts, as follows: Climate change results from the incremental addition of GHG emissions from millions of individual sources, which collectively have a large impact on a global scale. CEQ recognizes that the totality of climate change impacts is not attributable to any single action, but are exacerbated by a series of actions including actions taken pursuant to decisions of the Federal	Climate change is a result of cumulative global GHG emissions (see pages 35-36 and 46). When considered in isolation of other GHG emissions sources, no single actions direct or indirect GHG emissions will result in climate change that is measurable beyond natural climate variability. The use of GHG emissions as a proxy for direct and indirect environmental is consistent with the Council on Environmental Quality draft Guidance on Consideration of GHG Emissions. Climate impacts are only measurable when the action is evaluated cumulatively with other GHG emissions sources throughout the world. These impacts are discussed in the cumulative analysis, see section 3.3.2.4 (pages 40-46).

Comment Number	Commenter	Comment	Response
		<p>Government. Therefore, a statement that emissions from a proposed Federal action represent only a small fraction of global emissions is essentially a statement about the nature of the climate change challenge, and is not an appropriate basis for deciding whether or to what extent to consider climate change impacts under NEPA. Moreover, these comparisons are also not an appropriate method for characterizing the potential impacts associated with a proposed action and its alternatives and mitigations because this approach does not reveal anything beyond the nature of the climate change challenge itself: the fact that diverse individual sources of emissions each make a relatively small addition to global atmospheric GHG concentrations that collectively have a large impact. Further, even in combination with a general, qualitative discussion of climate change, calculating only the tons of greenhouse gases emitted or a percent comparison to sectoral or national emissions fails to meaningfully assess the actual incremental impacts to property, human health, productivity, and so on. An agency therefore falls short of its legal obligations and statutory objectives by focusing just on volume estimates.</p>	
16.	SUWA	<p>A statement that emissions from a lease sale represent only a small fraction of global emissions is essentially a statement about the nature of the climate change challenge, and is not an appropriate basis for deciding whether or to what extent to consider climate change impacts under NEPA.</p> <p>Here, BLM's only attempt to assess the significance of emissions is to use EPA's Greenhouse Gas Equivalencies calculator to convert its estimate of emissions to the equivalent emissions from passenger vehicles and home energy use for one year. See, e.g., EA at 38. While this may be helpful for contextualizing emissions, it is completely insufficient to meet BLM's obligations under NEPA to analyze and disclose significance.</p>	<p>Consistent with NEPA guidance, the EA makes no analysis nor disclosure of significance but provides the context and intensity for the decision maker to evaluate the significance of GHG emissions and climate impacts. BLM provided, for review, an unsigned Finding of No Significant Impact (FONSI) at the time it issued the Notice of Competitive Lease sale and draft EA. Before a final decision is made, the rationale in the FONSI will be reviewed in the context of SUWA's comment, and the authorized officer can then choose whether or not to sign the FONSI or that an EIS must be prepared prior to issuing the leases.</p>
17.	SUWA	<p>BLM must analyze the significance and severity of emissions, so that decisionmakers and the public can determine whether and how those emissions should influence the choice among alternatives.</p>	<p>See response to comment 16.</p>
18.	SUWA	<p>To take the required "hard look," BLM must tell the public what quantitative estimates mean in terms of "actual environmental effects." While BLM is not required to use any specific protocols to determine the significance of emissions under NEPA, it must undertake a more robust discussion of GHG emissions. Accepted methods exist to quantify and analyze the significance of GHG emissions (through monetization), which BLM could use to evaluate the significance of those emissions and to balance consequences of emissions against benefits of a specific approval. Here, BLM failed to analyze and disclose the significance of the emissions and related climate change impacts using existing tools, such as the Interagency Working Group's Social Costs of Greenhouse Gases and global carbon budgeting.</p>	<p>SUWA is suggesting that the BLM should use the social cost of carbon or global carbon budgets to determine the significance of emissions. The BLM considered both the social cost of carbon and climate budgets and chose not to use them for several reasons.</p> <p>Reasoning for not using social cost of carbon are provided in Appendix E and are expanded upon here. First, social cost of carbon estimates is an economic metric meant to monetize the net effects associated with an increase in carbon dioxide emissions. As such, social cost of carbon estimates is developed through an economic cost-benefit analysis. NEPA does not require an economic cost-benefit analysis (40 C.F.R. § 1502.23). Without a complete monetary cost-benefit analysis, which would include the social benefits of energy production to society as a whole and other potential positive effects, inclusion of a global social cost of carbon analysis would be unbalanced, potentially inaccurate, and not useful. Additionally, CEQ's draft NEPA Guidance on Consideration of GHG Emissions states "an agency need not weigh the effects of the various alternatives in NEPA in a monetary cost-benefit analysis using any monetized Social Cost of Carbon (SCC) estimates and related documents (collectively referred to as "SCC estimates"), or other similar cost metrics" (CEQ 2019). Also, without an established threshold for acceptable carbon costs the use of SCC would simple be a conversion from one proxy (emissions) to another (cost).</p> <p>Further, social cost of carbon estimates is just one approach that an agency can take to examine climate consequences from GHG emissions associated with the proposed leasing action. The fact that climate impacts associated with GHG emissions were not quantified in terms of monetary costs does not mean that climate impacts were ignored in this EA. This EA quantifies greenhouse gas emissions as the common metric and then qualitatively discusses potential climate impacts. Climate change and potential climate impacts, in and of themselves, are often not well understood by the general public (Etkin and Ho 2007), and (National Research</p>

Comment Number	Commenter	Comment	Response
			<p>Council 2009)). This is in part due to the challenges associated with communicating about climate change and climate impacts, stemming in part from the fact that most causes are invisible factors (such as greenhouse gases) and there is a long lag time and geographic scale between causes and effects (National Research Council 2010). Research indicates that for difficult environmental issues such as climate change, most people more readily understand if the issue is brought to a scale that is relatable to their everyday life (Dietz 2013); when the science and technical aspects are presented in an engaging way such as narratives about the potential implications of the climate impacts (Corner, et al. 2015); use examples and make information relevant to the audience while also linking the local and global scales (National Research Council 2010). In order to more effectively convey the potential climate impacts the BLM quantified greenhouse gas emissions as a common metric, presented emissions in an equivalent related to everyday life, and discussed narratively climate impacts. This approach presents the data and information in a manner that follows many of the guidelines for effective climate change communication developed by the National Academy of Sciences (National Research Council 2010) by making the information more readily understood and relatable to the decision-maker and the general public. The approach taken by the BLM for this EA to discuss climate change provides impacts at several scales whereas the social cost of carbon metric only provides an impact metric at the global scale. This limits the usefulness for the decision-maker given the lack of information on more localized impacts. The BLM approach in the EA meets the “hard look” requirement by presenting the environmental impacts of the proposal and the alternatives in comparative form (quantified greenhouse gas emissions), and discusses cumulative climate impacts, providing for the definition of issues and environmental consequences ensuring that an informed decision can be made.</p> <p>Carbon budgeting is an approach for identifying how much additional CO₂ emissions the atmosphere can accept in order to limit global warming to a certain temperature above pre-industrial levels (2.0C for Paris Agreement, 1.5C for IPCC 2018 Special Report (IPCC 2018)). The carbon budget was developed as a tool to assist policy makers in reducing GHG emissions on national and global scales. There is no requirement or mechanism to apply a worldwide carbon budget to a site-specific project such as the proposed action. Carbon budgets do not currently exist at the national or state level, and creating such a budget is beyond the scope of this EA. While a carbon budget sounds like a simple tool there is a lot of complexity and uncertainty to it that make it confusing to the decision maker and public. There are multiple carbon budgets to choose from, each representing a different amount of global warming. Even for a carbon budget that limits warming to 1.5C, scientists have struggled to agree on the size of the budget. According to the IPCC 2018 Special Report, “uncertainties in the size of these estimated remaining carbon budgets are substantial.” The IPCC estimates the budget for a 50/50 chance of exceeding 1.5C at 580 gigatonnes of CO₂ (GtCO₂), with an uncertainty of ±400GtCO₂. This uncertainty is nearly 70% of the budget. The uncertainty results from what the precise meaning of the 1.5C target is, definition of what “surface temperature” means, definition of the “pre-industrial” period, what observational temperature dataset to use, uncertainty in non-CO₂ factors that influence warming, and if earth-system feedbacks should be taken into account. With the large uncertainty in the remaining carbon budgets, it is not a useful tool for evaluating a GHG emissions significance level at this time. Additionally, carbon budgets are inherently reduced with any GHG emissions. Based on the disclosed GHG emissions in the EA and the substantial uncertainties in the size of carbon budgets, inclusion of carbon budgets would not provide additional useful information to the decision maker or public. The IPCC further states that policy actions across sectors and spatial scales are needed to reduce emissions and limit warming. Evaluations of such policy actions are beyond the scope of this EA.</p>
19.	SUWA	The Lease Sale EA failed to analyze alternatives through the proper lens of the Tenth Circuit Court of Appeal’s “rule of reason” standard. BLM’s stated purpose and need, and “decision to be made,” for the Lease Sale EA are exceedingly broad. See EA at 3. These sweeping objectives govern BLM’s range of alternatives and dictate the reasonableness of recommended alternatives including those proposed herein by SUWA.	The commenter quotes <i>Colo. Envtl. Coal. v. Dombeck</i> , 185 F.3d (10th Cir. 1999)) 1174: “(T)he number and nature of alternatives must be “sufficient to permit a reasoned choice of alternatives as far as environmental aspects are concerned.” In the case of a leasing EA, each parcel is essentially a stand-alone proposed action, and there are hundreds of possible combinations between a decision to lease all the parcels and a decision to lease none of them. The number of potential combinations increases exponentially when the possibility of removing portions of parcels is factored in. This number of potential “alternatives” constitutes a “reasoned choice” for the decision maker.

Comment Number	Commenter	Comment	Response
		<p>BLM must also analyze and disclose the GHG emissions associated with each alternative, so it can meaningfully consider a reasonable range of alternatives that would decrease the emissions resulting from its actions. Two recent cases are instructive. In <i>Western Organization of Resource Councils v. BLM</i>, the court invalidated BLM's EISs for the Buffalo and Miles City resource management plans because the agency failed to consider a reasonable alternative that reduced the amount of coal made available under the plans. 2018 WL 1475470 at *9 (D. Mont. March 26, 2018). The court found that "BLM's failure to consider any alternative that would decrease the amount of extractable coal available for leasing rendered inadequate the Buffalo EIS and Miles City EIS in violation of NEPA." Id. at *9. The court explained, "BLM cannot acknowledge that climate change concerns defined, in part, the scope of the RMP revision while simultaneously foreclosing consideration of alternatives that would reduce the amount of available coal based upon deference to an earlier coal screening that failed to consider climate change." Id. at *17. Similarly, in <i>Wilderness Workshop</i>, the court found that BLM failed to consider reasonable alternatives by omitting any option that would meaningfully limit leasing and development within the planning area. 342 F. Supp. 3d at 1167.</p>	<p>The commenter references two court decisions indicating that, in an RMP amendment, the BLM must consider alternatives that would limit the amount of coal extracted and limit the leasing and development in the planning areas, and contends that the lease sale EA must do the same. However, SUWA's contention does not take into consideration the difference in the decision made in a lease sale EA as opposed to a Resource Management Plan (RMP). Only an RMP revision or amendment can close lands to leasing, thus the impacts would differ for each alternative. Only the indirect impacts would differ in a lease sale EA. Since an alternative in an EA would presumably only remove particular lands temporarily (i.e. <i>defer</i> them) the cumulative impact analysis would remain the same since it would be based on the same RFDS calculated for the cumulative impact analysis area (CIAA) for each resource. There would be no conceivable difference in GHG emissions and the ensuing climate change. In section 6.6.3 of the BLM NEPA Handbook, it states the BLM: "may eliminate an action alternative if...it would have substantially the similar effects to an alternative that is analyzed." Therefore, the court decisions referenced by SUWA are not applicable to this context.</p>
20.	SUWA	<p>Finally, as discussed in more detail <i>infra</i>, on February 27, 2020, Magistrate Judge Bush, of the District of Idaho, reinstated certain sections of Instruction Memorandum No. 2010-117, Oil and Gas Leasing Reforms—Land Use Planning and Lease Parcel Reviews (May 17, 2010) ("IM 2010-117") (attached). See <i>W. Watersheds Project v. Zinke</i>, --- F. Supp. 3d. ---, 2020 WL 959242 (D. Idaho Feb. 27, 2020. Relevant here, the court reinstated IM 2010-117 section III.E, which requires among other things (emphases added):</p> <p style="padding-left: 40px;">The EA will analyze a no action alternative (no leasing), a proposed leasing action (leasing the parcel(s) in conformance with the land use plan), and any alternative to the proposed action that may address unresolved resource conflicts.</p> <p>Id. at *30 (ordering that "[f]or all succeeding oil and gas lease sales, use of IM 2018-034, Section III.D . . . is enjoined and replaced with IM 2010-117, Section III.E").</p> <p>SUWA's recommended alternatives satisfy the "rule of reason" and therefore should be considered by BLM in the EA. Moreover, these alternatives, and the three alternatives BLM has already rejected without having viewed them through the proper legal standard, are fall within BLM's statutory mandate and authority under FLPMA. For example, these alternatives allow BLM to "respond" to the expressions of interests for oil and gas leasing and thus, satisfy BLM's stated objectives. See EA at 3. They also satisfy BLM's "decision to be made" because they afford the agency the ability to "determine whether or not to lease the nominated parcels and, if so, under what lease terms and conditions (stipulations and/or notices)."</p>	<p>Due to the nature of the leasing process, BLM is able to resolve most resource conflicts before the nominated lands are parceled out. For instance, before the 2015 Greater Sage grouse Plans were approved, BLM routinely confined parcels to outside of proposed habitat management areas. Once the Plans were in effect, BLM no longer considered leasing in Sage grouse PHMA and GHMA to be a resource conflict. Thus, the wording the commenter quoted from IM 2010-117 was rarely put into effect. BLM also does not consider lands with a high probability for cultural resources to be an unresolved conflict either, due to the non-discretionary application of the NHPA. BLM attaches a notice to such parcels to inform potential lessees that development of the surface of the lease may be constrained, perhaps severely constrained, to protect cultural resources. As far as a "wildlife species avoidance" alternative, as with the previous example with the sage-grouse, BLM can resolve conflicts prior to parceling, if resource specialists believe that existing laws, regulations, stipulations and policy are not sufficiently protective.</p>
21.	SUWA	<p>Importantly, FLPMA and the MLA afford BLM broad authority over the management of public lands, as recognized for decades by both the Board and Federal courts. BLM routinely conditions its authorizations related to oil and gas exploration and development on public land through the use of such protective measures. Ken Kreckel, <i>Feasibility of Utilizing a Phased Development Approach to the Horse Bench Natural Gas Development</i>, Environmental Assessment, DOI-BLM-UT-G020-2015-0011-EA (March 2018) (explaining the feasibility of requiring a phased development approach and highlighting several instances where BLM required such an approach) (attached). As such, BLM should analyze and consider each recommended alternative.</p>	<p>This alternative would be appropriate for the RMP revision or development stages, not the leasing stage. It is beyond the scope of this document to analyze such an alternative.</p>

Comment Number	Commenter	Comment	Response
22.	SUWA	<p>The Lease Sale EA arbitrarily relies on sections of Instruction Memorandum No. 2018-034, Updating Oil and Gas Leasing Reform—Land Use Planning and Lease Parcel Review (Jan. 31, 2018) (“IM 2018-34”) (attached) that have been set-aside by a Federal court as unlawful. As SUWA has previously explained, BLM is enjoined from relying on sections of IM 2018-34 and must instead comply with the reinstated sections of IM 2010-117. See generally SUWA Letter to BLM Re: Pending Oil and Gas Lease Sale Decisions Conducted in Violation of Law (March 20, 2020)</p> <ul style="list-style-type: none"> • Section III.A (“Parcel Review Timeframes”). • Section III.B.5 (“Public Participation”). • Section III.D (“NEPA Compliance Documentation”). • Section IV.B. (“Lease Sale Parcel Protests”). <p>The court reinstated the corresponding sections in IM 2010-117, which BLM must follow in all lease sales involving greater sage-grouse habitat. However, the court’s reasoning for setting-aside these sections of IM 2018-34 applies to all lease sales conducted pursuant to that guidance regardless of whether they involve greater sage-grouse habitat.</p> <p>Relevant here, the Lease Sale EA and BLM’s underlying leasing process for the June 2020 lease sale followed the above-cited unlawful sections in 2018-34, and failed to comply with the reinstated sections of IM 2010-117. For example:</p> <ul style="list-style-type: none"> • BLM plans to hold a “10-day protest period.” EA at 2. This 10-day requirement comes from section IV.B of IM 2018-34, which the court set-aside as unlawful. Instead, IM 2010-117 section III.H requires “[a] 30-day protest period.” • BLM plans to post the Notice of Competitive Lease Sale (“NCLS”) 45-days prior to the sale scheduled for June 9, 2020. See EA at 2 (“The parcels would be available for sale at an online auction held by the BLM, tentatively scheduled for June 9, 2020”); BLM, Utah Oil and Gas Lease Sales, https://www.blm.gov/programs/energy-and-minerals/oil-and-gas/leasing/regional-lease-sales/utah (“Tentative Posting of NCLS . . . April 23, 2020,” i.e., 45 days before the June 9, 2020 sale). However, pursuant to the reinstated section III.H of IM 2010-117, BLM must post the NCLS “at least 60 days” before the sale. • As noted supra, BLM must, pursuant to IM 2010-117 section III.E, analyze three NEPA alternatives. However, in the EA, BLM analyzed only two: the lease everything and lease nothing alternatives. See EA at 20-21. • BLM followed the six month EOI review requirement in IM 2018-34 section III.A rather than take a deliberative approach that allowed the agency to “devote sufficient time and resources,” as required by IM 2010-117 section III.A. <p>Therefore, BLM must revise its EA and postpone the June 2020 lease sale in order to come into compliance with IM 2010-117. The agency cannot continue to rely on sections in IM 2018-34 found to be unlawful—and enjoined—by a Federal court. SUWA appreciates BLM’s consideration of these comments and prompt attention to the matters discussed herein.</p>	<p>Comment noted. BLM is already in compliance with the court because it was following the preliminary injunction when it came to length of time for comment periods and protests periods. There were numerous policy differences between the old and new leasing reform IMs and BLM is complying on those policies that were litigated.</p>

Comment Number	Commenter	Comment	Response
23.	SUWA	Here, BLM has failed to undertake any NEPA analysis for cultural resources. Instead, the agency discussed cultural resources only in its ID Team Checklist and relies solely on its NHPA analysis and various stipulations.	See comment response 1. Reasonably Foreseeable impacts were identified in the RMP and MPL EISs. BLM prepared a Section 106 cultural report specific to the parcels and determined that they were appropriate for leasing.
24.	Outdoor Alliance	The proposed leases contemplated in this EA could cause safety and health issues and damage the outdoor recreation experiences of boating enthusiasts, rock climbers, hikers, hunters and anglers, and other users of the world class public lands in southern Utah. Outdoor Alliance is concerned that these proposed leases and subsequent ground disturbing activities will affect recreation assets and experiences, in particular important boating on the Green River, which will negatively affect the City of Green River, a municipality working hard to develop its recreation amenities and boost its outdoor recreation economy. The City of Green River lies in between two recently designated Wild and Scenic River segments, Desolation and Labyrinth Canyons, and is working under grants with the Utah Office of Outdoor Recreation Industry and Emery County Travel Bureau, along with other state and local agencies, to develop river access and amenities to encourage contiguous recreational use on the river between these two river segments. ³ These efforts from the City of Green River are promoting water-based recreation on the Green ⁴ as a strategy to capture outdoor recreation tourists and boost the local economy. Impacts to scenery and water quality from parcels 001 and 002 could have a direct effect on these efforts. Outdoor Alliance is concerned that these proposed leases and subsequent ground disturbing activities will affect recreation assets and experiences, in particular important boating on the Green River, which will negatively affect the City of Green River, a municipality working hard to develop its recreation amenities and boost its outdoor recreation economy.	Background Information. No response required.
25.	Outdoor Alliance	Outdoor Alliance is concerned that in this EA the BLM fails to analyze potential impacts from these proposed lease sales on specific recreation areas. Because the direct, indirect, and cumulative effects that would result from implementation of this lease sale would be detrimental to recreation experiences and local communities that have invested in recreation assets, the BLM should better analyze the effects of this competitive lease sale on the region's recreation economy and how it would inhibit future growth opportunities in the local business community and socioeconomics regionally. Outdoor Alliance asks the BLM to defer the leases noted herein and provide a more appropriately detailed EA that considers how to best implement its multiple use mandate and protect recreation as a "primary" multiple use of our public lands consistent with the Federal Land Policy and Management Act (FLPMA).	<p>Table 4-18 (pages 4-62 to 4-64, section 4.10.6 (pages 4-71 to 4-74) and Pages 4-104 to 4-106 of the 2016 Moab Master Leasing Plan Final EIS identify reasonably foreseeable impacts to recreation, visitor experience and economics from the potential oil and gas development of the areas proposed to open for leasing under the agency preferred alternative, which was chosen in the Record of Decision. In the Summary of Economic Impacts, it is stated:</p> <p style="padding-left: 40px;">Under all action alternatives (B, C, and D) it is assumed that recreation visitor days to BLM lands within the Planning Area will continue to increase at the historical annual compound growth rate of approximately 3.1 percent. However, the recreation experience would differ by alternative as discussed in Section 4.10.3 which could impact total recreation spending. Based on a 3.1 percent growth assumption, recreation visitation in the Planning Area would generate \$760.9 million (in present value and 2014 dollars) in total economic output over the 15-year life of the plan. This economic activity would include \$446.6 million in labor earnings, and support an average of 1,086 jobs per year. To the extent that actual future visitation is greater or less, the corresponding economic impacts would be greater or less. (Page 4-106)</p> <p>That there would be negative impacts to visitor experience, and some consequential negative economic impact from reduced recreational spending was disclosed in the EIS and does not need to be re-analyzed in the EA.</p>
26.	Outdoor Alliance	This EA proposes leases (Parcels 001 and 002) adjacent to the Green and will negatively impact Labyrinth Canyon on the Lower Green River, ¹⁰ which was recently designated in the John D. Dingell, Jr. Conservation, Management, and Recreation Act as a Wild and Scenic River. Proposed lease parcels 001 and 002 would affect the viewshed of boaters—and potentially impair the water quality—on the Green River, which includes two important sections, Labyrinth Canyon and Stillwater Canyon. The popular trip through Labyrinth Canyon on the lower Green River can be enjoyed at almost any time of the year. This backcountry	Background Information. No response required.

Comment Number	Commenter	Comment	Response
		<p>stretch is unique as it is an easy flatwater run suitable for canoes, kayaks, and rafts of all types. Labyrinth Canyon was named by John Wesley Powell during his 1869 expedition for its meandering course. The canyon is a geologic wonderland with canyon walls composed of layered sandstone. Below Labyrinth Canyon, Stillwater Canyon winds through Canyonlands National Park. Amazing rock formations and scenery on a grand scale, along with ruins and rock art sites, provide plenty of opportunities for exploration. Here the river provides access into the Doll House and the Maze. In addition to visual, safety and water quality impacts to the Green River, the EA fails to acknowledge the socioeconomic benefits of boating on the Green. The EA identifies recreational impacts as an issue not included in further analysis, but does not clearly provide a rationale that there would be no impacts of a leased and developed parcel 001 or 002. The Utah Division of Forestry, Fire, and State Lands (FFSL) jointly manages the segment of river adjacent to these parcels with the BLM. Their Final Comprehensive Management Plan identifies the need to</p> <p>“balance recreation needs, development, and protection of the natural environment.” However, the objectives specifically state that any new development shall not inhibit or negatively affect existing recreation or prevent future recreation infrastructure. The EA incorrectly identifies Wild and Scenic River as “not present” within the area impacted by the proposed action. Parcels 001 and 002 are 3.9 miles from the beginning of Labyrinth Canyon section, which was designated as Scenic in the John D. Dingell, Jr. Conservation, Management, and Recreation Act this past year. Contamination of groundwater and leaks or spills from oil and gas drilling on either parcel could cause severe impacts to this section of the Green River. BLM needs to address the Wild and Scenic Rivers resource as “present with potential for relevant impact that needs to be analyzed in detail in the EA” to accurately analyze the proposed action and ensure protection and enhancement as outlined in BLM Manual 6400.</p>	
27.	Outdoor Alliance	<p>This EA also proposes leasing Parcel 014, which affects several rock climbing routes at Muleshoe Canyon, including the Muleshoe Canyon Tower and various routes on the Sunvana Wall. This is a beautiful, remote-feeling canyon only minutes from Moab with easy access to a selection of "easy" climbs, which is unusual for the Moab area. Muleshoe is also a great winter climbing location given its generally south-facing climbing routes. Rock climbing in the region has become a significant activity on local BLM lands, attracting thousands of climbers internationally and generating significant revenues to the local economy.</p>	<p>Oil and gas development would not preclude the use of the walls of Muleshoe Canyon for rock climbing. That being said, the lands surrounding and adjacent to Muleshoe Canyon and its tributaries are designated VRM Class II, which will substantially constrain development on that part of the parcel minimize negative impacts to user-experience.</p>
28.	Outdoor Alliance	<p>The BLM has an obligation under the National Environmental Policy Act (NEPA) and FLPMA to evaluate the direct, indirect, and cumulative impacts of this lease sale on implicated recreation assets. Under NEPA, the BLM must fully evaluate the direct, indirect, and cumulative impacts of its actions and, importantly, must supplement prior environmental analyses when presented with “significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.” Moreover, under FLPMA, BLM must maintain and base implementation decisions on current inventories of the public lands “to identify new and emerging resource and other values.” The BLM must also strive to coordinate its management actions “with the land use planning and management programs” of local governments. Yet, for this lease sale, BLM has not fulfilled these requirements as they pertain to the town of Green River and its associated recreation opportunities. The BLM delays any meaningful analysis of the impacts of these leases—including any impairment of recreation and water and air quality resources—until the subsequent Application for Permit to Drill (APD) phase after the leases are sold. Federal courts have rejected this approach, particularly when, as here, BLM is not in each case employed no-surface occupancy (NSO) stipulations that will prevent future ground-disturbing activities.</p>	<p>See comment response 25. The Moab MLP EIS disclosed that there may be negative economic impacts due to recreation activities.</p>

Comment Number	Commenter	Comment	Response
29.	Outdoor Alliance	In this EA, Outdoor Alliance believes the BLM fails to take a hard look at impacts on boating and climbing from these proposed oil and gas leases. Among other effects, industrial activities from these proposed leases have the potential to discourage visitors from coming to Green River and boating Stillwater and Labyrinth Canyons, resulting in a loss of tourist income for the local economy. The EA notes that “Parcels 001 and 002 are upstream of Ruby Ranch, the main put-in for boaters through Labyrinth Canyon. [And that] some boaters put in upstream at Green River State Park, and may be subjected to the sights and sounds of development of the parcel.” This impact should be more extensively assessed in the EA. This development would hinder expansion of boaters putting in at the State Park, directly affecting efforts to broaden the use of that public river access. While Ruby Ranch is more heavily used, it is privately owned and thus subject to changes in use. The BLM asserts that the “parcel is NSO on all but the northern portion of the parcel (Figure 11), but all of the NSO outside of the Three Rivers Withdrawal has exceptions, modifications and waivers that would allow development under certain circumstances.” Moreover, Parcel 001 is within the Moab MLP, which imposes an NSO stipulation (UT-S-407) on within one mile of the Green River, a popular flatwater floating venue. In addition, Parcel 001 is partially within the Three Rivers Withdrawal, which is managed as NSO under UT-S-362.21 The EA fails to provide analysis on how these stipulations would affect the type and size of development on the site and how the river recreation experience would be impacted.	It is unclear how the potential development of the parcels “would hinder expansion of boaters putting in at the State Park, directly affecting efforts to broaden the use of that public river access.” The EA discloses that boaters on the section of the Green River above Labyrinth Canyon, which is not designated as a Wild or Scenic River nor which flows through a Wilderness Area, may see or hear signs of development, as would be expected for an area that is managed for multiple use. Development proximate to the River in no way precludes recreational use of it.
30.	Outdoor Alliance	While the BLM acknowledges likely air-quality impacts from these leases, the EA fails to account for likely impacts to the water quality of the Green River that is vital to the experiences of the boating community and associated river-based outdoor businesses. The EA states that “leasing the parcels does not directly impact water quality or quantity” and that subsequent “lease notices” at the APD stage will ensure that subsequent actions on the leased parcels “do not degrade existing water quality conditions” because standard operating procedures “required by regulation and design features would be sufficient to... protect all usable ground or surface water sources.” These are the same precautions that in 2014 resulted in multiple large-scale leaks of oil and gas into the Green River. Given the ineffective safeguards on water quality impacts from these new leases, the popularity of this river segment, and the efforts of the city of Green River to develop its river-based outdoor recreation economy, the BLM should defer these proposed lease parcels located adjacent to the Green River.	<p>Page 4-148 of the Moab MLP states:</p> <p>Alternative D (the Preferred Alternative) provides an exception to the NSO for visual resources that could result in some additional mineral development and impacts to water resources from surface-disturbing activities within VRM Class II areas. This exception could result in more impacts to water resources from surface-disturbing activities than would be allowed in Alternative B1.</p> <p>Alternative B1 stated:</p> <p>Mineral operations for oil and gas and potash can result in inadvertent and unplanned leaks or spills. Spills from drilling and production, pipelines and potash production (including brines and petroleum) have the potential to significantly impact surface and groundwater resources, especially when in close proximity to a waterbody, including ephemeral and intermittent streams and wetlands, or over unconfined aquifers. In general, when more land is available for mineral leasing, there is a greater projected level of mineral development. Higher levels of mineral development could result in a higher likelihood of a leak or spill. Alternative B1 would result in less projected oil and gas and potash development than in Alternative A (see Table 4-16 and Table 4-17). In addition, Alternative B1 does not allow potash and oil and gas development to occur on the same tracts of land and at the same time. Therefore, Alternative B1 has less likelihood of leaks and spills than under Alternative A.</p> <p>Reasonably Foreseeable Impacts to the Green River from spills are captured in the EIS. That being said, drilling technology and safety has improved dramatically since the well discussed in the articles mentioned in the comment were drilled.</p>
31.	Outdoor Alliance	The BLM is required in this EA to provide a meaningful environmental analysis of potential impacts from the proposed leases on recreation experiences and related socioeconomics. Pursuant to NEPA and federal case law, environmental analysis is required at the lease sale phase when: 1) there’s an “irretrievable commitment of resources,” and 2) impacts are reasonably foreseeable. ²⁸ According to federal courts, issuing a lease without a No Surface	See comment response 25.

Comment Number	Commenter	Comment	Response
		<p>Occupancy (NSO) stipulation is an “irretrievable commitment of resources,” because at that point BLM no longer has the authority to stop surface-disturbing activities. Because proposed leases in this EA containing recreation resources that do not benefit from an NSO designation, issuing those leases constitutes an irretrievable commitment of resources. Secondly, as noted above, the BLM’s own Reasonably Foreseeable Future Development scenario (RFFD) for oil and gas in the Moab Field Office identifies foreseeable impacts for these leases.</p> <p>Accordingly, because the BLM is irretrievably committing public resources, and the BLM’s own RFFD describes significant ground-disturbing activities that could negatively impact recreation experiences, the BLM should either defer the leases in this EA that contain recreation assets or reissue this EA with a more detailed environmental analysis of impacts from oil and gas leasing on recreation assets and socioeconomics regionally.</p>	
32.	Outdoor Alliance	<p>The BLM’s multiple-use mandate prohibits the management of public lands primarily for energy development or in a manner that unduly or unnecessarily degrades other “co-equal” uses. “Outdoor recreation, fish and wildlife, grazing, and rights-of-way must receive the same consideration as energy development.”²⁹ Therefore, we request that the BLM either defer the leases in this EA that implicate recreation assets, or implement the following standards in order to uphold the agency’s multiple use mandate and treat recreation as a co-equal use of public lands:</p> <ul style="list-style-type: none"> • NSO stipulation for a 1-mile radius from developed recreation site boundaries. • • NSO stipulation within 0.5 miles of the centerline of high use routes (motorized) and trails (non-motorized). • • NSO stipulation for a 0.5-mile radius around high use recreation areas. • • NSO stipulation to all VRM Class II areas in Special Recreation Management Areas and a Baseline CSU stipulation throughout the remainder of SRMAs. • • Apply an NSO stipulation to Recreation Focus Areas. <p>Moving forward, the BLM should develop a more comprehensive analysis of recreation use patterns and how these leases might affect those experiences and related socioeconomics. Recreation is an important economic driver to the state of Utah, with long-term growth potential. We ask you to analyze potential impacts from this lease sale on recreational experiences, local tourism, and the broader economy of the communities and residents of Utah.</p>	See comment response 29.
33.	Public Lands Policy Coordinating Office	<p>Thank you for the opportunity to support and comment on the Bureau of Land Management’s (BLM) June 2020 Competitive Oil and Gas Lease Sale. The State encourages the development and utilization of natural resources to promote economic development and benefit its citizenry. The oil and gas industry has played a significant role in Utah’s economic prosperity, especially for counties and local communities. Development is essential to the State’s energy plan. The State supports the proposed lease sales of Parcels 001 and 002 in Grand County, and Parcels 013 and 014 in San Juan County.</p> <p>Recreation and tourism also play major roles in Utah’s economy, and local drinking water sources are vitally important in our desert state. The State appreciates that BLM listened to the concerns of Governor Herbert and the locally elected officials, then excluded Parcels 011 and 012 from the proposed lease sale. This decision ensures that the June 2020 lease sale would not be detrimental to the Sand Flats Special Recreation Management Area and Grand County’s drinking water sources. The State supports BLM’s decision not to bring forward cultural</p>	Comment noted.

Comment Number	Commenter	Comment	Response
		resources for detailed analysis in the EA. BLM's efforts to comply with 54 U.S.C. § 306108 relative to this undertaking are outlined in the Chapter 4 of the EA, and it is expected that BLM and the Utah State Historic Preservation Officer will interact and cooperate in accordance with the Supplemental Procedures for Oil and Gas leasing listed in Appendix E of the recently signed Protocol Agreement. Thank you for considering the State's support and comments on this project. Please call or email if you have further questions.	
34.	Michael Strong	Do not support. I do not support opening any public lands to oil and gas drilling. Just 9 more months and I believe you can all go back to work for Exxon. Thank you.	Comment noted.
35.	Victor Alcala	Stop the lease for oil and gas of our public lands. Please stop the oil and gas lease sale. This will be a sad end for one of the most beautiful states in American and the world. Future generations won't think about how much gas you got from this land if all is destroy. Thank you.	Comment noted.
36.	Marija Minic	I'm writing to share my concerns about DOI-BLM-UT-0000-2020-0002-EA (2020 Utah June Competitive Oil and Gas Lease Sale). While I greatly appreciate the BLM's decision not to offer for lease parcels 11 and 12, directly overlapping with the Slickrock trail and camping areas along Sand Flats Rd., the lease sale still directly harms recreational resources in the area. As currently proposed, parcels 1 and 2 will negatively affect the boating experience on the Green River just upstream of the Wild and Scenic Labyrinth canyon and a popular river access point at Ruby Ranch. Additionally, risks to water quality in the area are very real, as illustrated by a substantial 2014 oil spill along the river. Parcel 14 also contains climbing areas at Muleshoe Canyon. To protect the recreational experience, as well as water quality and other resource values, these parcels should be removed from the sale. More broadly, I am deeply concerned by the way in which this administration's "energy dominance" agenda is imperiling other values--including recreation and conservation--on our country's public lands and waters. It should not take a national uproar to ensure that treasures like Moab's iconic outdoor recreation opportunities are not offered for speculative oil and gas leases.	Comment noted. See comment response 25 and 27 and section 1.9.

Appendix I – Comments and Responses

As defined in the NEPA Handbook (page 40), “an ‘issue’ is a point of disagreement, debate, or dispute with a proposed action based on some anticipated environmental effect. An issue is more than just a position statement, such as disagreement with grazing on public lands. An issue:

- Has a cause and effect relationship with the proposed action or alternatives;
- Is within the scope of the analysis;
- Has not been decided by law, regulation, or previous decision; and
- Is amenable to scientific analysis rather than conjecture.”

Comments that express a professional disagreement with the conclusions of the analysis or assert that the analysis is inadequate may or may not lead to changes in the EA. Substantive comments and non-substantive comments are defined in the NEPA Handbook, H-1790-1, and section 6.9.2. The BLM National Environmental Handbook (H-1790-1) states that substantive comments do one or more of the following:

- Question, with reasonable basis the accuracy of information in the EIS or EA
- Question, with reasonable basis, the adequacy of methodology for, or assumptions used for the environmental analysis
- Present new information relevant to the analysis
- Present reasonable alternatives other than those analyzed in the EIS or EA
- Cause changes or revisions in one or more of the alternatives.

Comments that are not substantive or comments received after the close of the public comment period may not receive a response.

All comments received will be incorporated fully into Appendix I. Not: paragraph numbering was added. The BLM received 372 comments. Thirty-five (35) comment letters that were received was posted on ePlanning. Due to the length, the BLM has summarized comments. The documents, in its entirety, are included in the 35 comment letters that are published on ePlanning.

<i>Number</i>	<i>Commenter</i>	<i>Comment</i>	<i>Response</i>
1.	EPA	<p><i>Air Quality Impacts from Previous NEPA Projects</i></p> <p>The EA briefly discusses air quality modeling analyses completed for other NEPA projects located in Utah (section 3.3.1). The projects include the West Fertilizer Project (Kleinfelder 2019), Moab Master Leasing Plan (MLP) Final Environmental Impact Statement (FEIS) Air Quality Analysis (BLM 2016), Fishlake National Forest Oil and Gas Leasing Analysis FEIS (USDAFS 2013), Monument Butte FEIS (BLM 2016), BLM’s Air Resource Management Strategy (ARMS) Modeling Project (BLM 2014), and UDAQ’s PM2.5 maintenance plan model assessment (UDAQ 2019). These projects were incorporated by reference into the EA to disclose the potential air quality impacts that could result from development of the proposed lease parcels without completing an air quality modeling analysis specific to that future development. The EA generally describes air quality analyses from these previous NEPA projects but does not highlight all predicted adverse air quality impacts that may be important to the decision for this action. To more fully inform the public and decision makers, we recommend the EA disclose all air quality impacts predicted by these previous analyses, including the following:</p> <ul style="list-style-type: none"> • The West Fertilizer Project (Kleinfelder 2019) analysis indicated that 1-hour NO₂ concentrations from drilling could approach 94% of the National Ambient Air Quality Standard (NAAQS) when drilling with Tier 2 engines. Further, projected benzene and formaldehyde emissions were predicted to increase cancer risk above one in one million for both the Maximally Exposed Individual (MEI) and the Most Likely Exposed (MLE) population. It may also be helpful to include Figure 16 and Figure 26 from Appendix A to illustrate the spatial extent of the predicted concentrations and cancer risks, respectively. • The West Fertilizer Project (Kleinfelder 2019) and Moab MLP FEIS Air Quality Analysis (BLM 2016) did not model hydraulic fracturing emissions and impacts. Hydraulic fracturing engines are typically the largest instantaneous source of NO₂ in oil and gas emission inventories. If well stimulation or hydraulic fracturing would occur on the proposed leases, then the impacts would 	<p>The BLM appreciates the EPA’s feedback on the incorporated air quality analysis. In this EA, guidance from the BLM NEPA Handbook H-1790 is used to incorporate by reference and tier to other NEPA analysis. Guidance from the handbook states, “incorporation by reference allows you to briefly summarize the relevant portions of these other documents rather than repeat them,” and tiering allows the EA to “narrow the range of alternatives and concentrate solely on the issues not already addressed.” Generally, the BLM reviewed and edited the EA to more clearly summarize the air quality information being incorporated by reference or tiered to. Specific points highlighted by the EPA have been addressed as follows:</p> <ul style="list-style-type: none"> • The EPA incorrectly states that the Fishlake National Forest Oil and Gas Leasing Analysis FEIS (USDAFS 2013) nearest receptor was at a distance of 1km from the emissions source. The Fishlake FEIS Section 3.12.3, page 163 says that receptor “distances rang[ed] from 0.25 to 200 km from the source.” The nearest distance of 1km is primarily used in screening tables which “are only for gauging if a more detailed analysis or a cumulative impact analysis should be considered (Fishlake FEIS Appendix D, page 36).” Based on information in the screening tables, the Fishlake FEIS recommended that additional analysis should be conducted for an exploratory well within 5 km of a Class I area and for a production well within 55km of a Class I area. The BLM follows this advice for parcels within 55 km of Class I areas by incorporating the West Fertilizer air analysis to estimate impacts from parcels near Arches and Canyonlands National Parks and prepared a VISCREEN analysis for parcels near Capitol Reef National Park (see EA, Section 3.3.1.2). Since the West Fertilizer and VISCREEN analysis reports impacts at distances of 1 km or less, it would be redundant to discuss potential Fishlake FEIS impacts at distances less than 1km. Additionally, the West Fertilizer analysis is more site specific for the impacted Class I areas than the Fishlake FEIS analysis. No edits to the EA are needed.

Number	Commenter	Comment	Response
		<p>likely be higher than predicted by these analyses and could potentially result in exceedances of the NAAQS, particularly the 1-hour NO₂ NAAQS.</p> <ul style="list-style-type: none"> • The Fishlake National Forest Oil and Gas Leasing Analysis FEIS (USDAFS 2013) used a nonstandard receptor network, with the nearest receptor at a distance of 1 kilometer (km) from the emission source. For NEPA modeling assessments, EPA recommends placing the nearest receptor at the ambient air boundary. For this project, a 1-hour NO₂ concentration of 127 µg/m³ was predicted at 1 km, and the impacts would likely be higher at distances closer than 1 km from the pad, thereby having the potential to exceed the 1-hour NO₂ NAAQS of 188 µg/m³. • The Moab MLP FEIS Air Quality Analysis (BLM 2016) predicted potential air quality impacts above applicable thresholds for visibility and nitrogen deposition at Arches and Canyonlands National Parks (NP). The EA for the current lease sale discloses on page 33 the maximum number of days in a year on which impacts were modeled as greater than 0.5 deciview (dv) change in visibility but does not state the maximum number of days in a year modeled as greater than 1.0 dv, which is a management threshold established to represent that an action or source may cause impacts to regional haze and is a level that may cause noticeable changes in visibility. Considering that some agencies use a 0.5 dv change in visibility as a screening threshold, and that the high emissions scenario under 2008 meteorological conditions resulted in 86 days in a year above 1.0 dv change in visibility and the medium emissions scenario resulted in 23 days above 1.0 dv, we recommend the EA further explain its conclusion that impacts from development of the lease parcels “are not likely to be perceptible” (page 34). It should be helpful to relate potential future development on the proposed leases to the emissions scenarios and associated impacts in the Moab MLP FEIS Air Quality Analysis to more clearly disclose the potential visibility impacts from future development. • The EA states that all modeled sulfur and nitrogen deposition values for the Moab MLP FEIS Air Quality Analysis were near or below the Deposition Analysis Thresholds (DAT), with the exceptions of nitrogen deposition under the high and medium emissions scenarios at Arches and Canyonlands NPs during 2008 meteorological conditions (page 34). However, the Moab MLP FEIS Air Quality Analysis also predicted exceedance of the DAT for nitrogen under the low emissions scenario at Canyonlands NP. We recommend the EA account for all these exceedances of the DAT for nitrogen deposition. It should also be helpful to relate potential future development on the proposed leases to the emissions scenarios and associated impacts in the Moab MLP FEIS Air Quality Analysis to more clearly disclose the potential deposition impacts from future development. This analysis would help to evaluate whether the negligible effects determination is supported. • The BLM ARMS Project (BLM 2014) predicted exceedances of the NAAQS and other air quality impacts (e.g., changes to pollutant concentrations above increments and impacts to air quality-related values). Even though the EA illustrates that the BLM ARMS Project predicts ozone exceedances (see Figure 1), the EA later states that the ozone concentrations modeled by the BLM ARMS Project are below the NAAQS (page 30). We recommend reconciling this discrepancy in the EA to specify the ozone exceedances that were predicted. The performance evaluation of the ARMS model also indicated that the model was biased low for ozone and its precursors. It may be helpful to explain in the EA that these predicted impacts may be underestimated. Based on our current understanding of the modeling incorporated into the EA, it appears to indicate that developing these leases has the potential to result in exceedances of applicable NAAQS thresholds and contribute to adverse impacts to visibility and deposition and increased risk of cancer.- 	<ul style="list-style-type: none"> • The EPA is correct that the West Fertilizer analysis did not evaluate emissions from hydraulic fracturing. This information is already identified in Appendix K (Section 4.2.1, page 25 of 61). It is not reasonably foreseeable that wells in the Moab Field Office will be hydraulically fractured as historically most wells in the area are not fractured. Lease notice UT-LN-102 identifies that additional analysis or mitigation may be needed which may be necessary if a lessee chooses to hydraulic fracture a well on the lease parcels. No edits to the EA are needed. • The BLM has added Figure 16 and Figure 26 from the Wester Fertilizer Nearfield Air Quality Impact Analysis to Appendix K as requested. The EA already identifies that predicted 1-NO₂ concentrations are below the NAAQS in Section 3.3.1.2 and that it is 94% of the NAAQS in Appendix K (Section 5.1, page 48 of 61). To clarify this information, section 3.3.1.2 was edited to show the percentage range below the NAAQS for all criteria air pollutants. The EA also identifies that MEI and MLE for benzene and formaldehyde in Appendix K (Section 5.3, pages 51-53 of 61). The addition of Figure 26 shows the distance of the one in a million cancer risk from the emission source. The MEI and MLE analysis is considered conservative since it assumes a person will be continuously exposed (24 hours per day, 365 days per year) over a 30 year period which is unlikely to occur since parcels are in remote locations far from residential areas. Impacts from HAPs are considered to be negligible since the analysis show cancer risks are below the 100 in a million threshold (40 CFR 300.430) and the Hazard Quotient and Hazard Index are less than 1.0. • The sentences referred to by the EPA regarding visibility and deposition impacts are direct quotes from the Moab MLP FEIS. The EA has been edited to also include AQRV information from Tables 4-4 and 4-5 on pages 4-7 and 4-8 of the Moab MLP FEIS. It should be noted that the Moab MLP FEIS is a planning level document to which this EA tiers to. Development of lease parcels in the Moab MLP boundary would not result in any new impacts beyond what has already been disclosed in the Moab MLP FEIS. • Section 3.3.1.4 was updated to list the potential development that was assumed for the low, medium, and high emissions scenarios in the Moab MLP FEIS. The BLM also added information about the amount of development occurring over the last five years (2015 to 2019). Historic development has averaged less than 2 wells per year and the Moab MLP FEIS low emissions scenario assumed 4 wells would be drilled per year. Development of lease parcels offered in the September 2020 lease sale are not anticipated to change the development rate in the area, and no new impacts beyond what was analyzed in the Moab MLP FEIS are expected. • The BLM thanks the EPA for identifying the point of confusion regarding the ARMS ozone model results. The following sentence was removed from section 3.3.1.4, “Modeled O₃ concentrations in the CIAA are below the NAAQS.” No additional edits are needed since the EA already identifies that the ARMS model predicted ozone to “exceed the NAAQS, in the Uinta Basin and along the Wasatch Front metropolitan area,” and “other areas of the state have concentrations below the NAAQS.” The EA also already lists the ARMS model biases by stating, “the ARMS model performance evaluation of ozone indicated a negative model bias (under predicts) during the winter and a positive model bias (over predict) during the summer in the 4 km domain.” The Uinta Basin airshed is the only location in Utah with a wintertime ozone problem. Development of lease parcels is unlikely to contribute to the modeled and monitored exceedances in the Uinta Basin or the Wasatch Front since the assumptions for analysis (Table 4) does not anticipate any wells being developed in these airsheds.
2.	EPA?	<i>Applicability of Previous Air Quality Analyses</i>	These recommendations are addressed in response to comment # 10.

Number	Commenter	Comment	Response
		<p>While we support the use of analog models at the lease sale stage, our review identified opportunities to better describe the applicability of these analyses to the potential development on the proposed leases. Specifically, we recommend expanding the discussion for each modeling project as follows:</p> <ul style="list-style-type: none"> • Relate the representativeness of the previously analyzed project areas and operations to potential development scenarios on the proposed leases. • Relate the types of sources, emissions, and model scenarios to potential development scenarios on the proposed leases. • Relate the control requirements and stipulations assumed in the air quality analyses to those that would apply to future development on the proposed leases. • Explain the uncertainties in the air quality analyses as they relate to the model performance or model biases, configuration options, best practices for air quality modeling, age of the analyses, and other key details to help interpret and relate the model results to potential development scenarios on the proposed leases. • Relate the model uncertainties to the model results and explain whether the bias in the model results could indicate potential exceedances of applicable thresholds. • Explain whether the model results are close to applicable thresholds and whether future development on the proposed lease parcels has the potential to exceed those thresholds. <p>This information will improve the description and interpretation of the model results for each project and help the public and decisionmakers understand the potential impacts to air quality from the development of the proposed lease parcels.</p>	
3.	EPA?	<p><i>Beneficial Effects of NSO Stipulations</i></p> <p>In reviewing the figures in Appendix C of the EA (e.g., Figure 9) that depict the locations of the lease parcels and applicable lease stipulations, it appears that there are parcels for lease near Canyonlands NP and the Labyrinth Wilderness Area that will be managed as No Surface Occupancy (NSO). These NSO buffers will reduce the potential for nearfield impacts in these areas. Therefore, we recommend discussing the effect of managing parcels adjacent to sensitive areas as NSO and how that may reduce or otherwise affect air quality impacts at locations such as Canyonlands NP and the Labyrinth Wilderness Area.</p>	Comment noted. The parcels near Canyonlands NP and the Labyrinth Wilderness Area have been deferred.
4.	Southern Utah Wilderness Alliance et. al. (SUWA)	SUWA Incorporates Its June 2020 Lease Sale Comments	The parcels proposed for the June sale have been deferred, and BLM declined to scour through the comments on the EA to determine how they might apply to the remaining parcels and this EA.
5.	SUWA	BLM Cannot Rely on Unlawful Sections of IM 2018-34... BLM should follow IM 2010-117 in all lease sales, including the September 2020 sale. This is because the court’s reasoning can easily be extended to non-greater sage-grouse leases because IM 2018-34, as the court explained, is procedurally invalid, substantively invalid, and thus, arbitrary. <i>See id.</i> at *27 (noting the “seriousness of BLM’s errors” regarding IM 2018-34).	This is beyond the scope of commenting on the EA.
6.	SUWA	BLM Must Acknowledge the Proposed NEPA Regulation Revisions	This is beyond the scope of commenting on the EA.
7.	SUWA	BLM’s Prioritizing of Leasing of Lands with Little or No Potential for Oil and Gas Development Violates FLPMA and the MLA.	This is beyond the scope of commenting on the EA.
8.	SUWA	<p>As SUWA has previously explained, BLM’s promise to perform meaningful NEPA analysis at the APD stage is a shell-game. The agency routinely does not analyze these impacts at the APD stage. To illustrate this point, SUWA provides the following example:</p> <ul style="list-style-type: none"> • The EA prepared for BLM’s December 2017 lease sale did not analyze impacts to water resources. <i>See</i> BLM, December 2017 Competitive Oil and Gas Lease Sale, Environmental 	BLM does not “promise” to perform analysis at the APD stage; such statements as . “Further analysis of hydraulic fracturing would occur at the APD stage if development of a specific well includes the use of hydraulic fracturing”); <i>id.</i> at 283 (Responses 22, and 23: “Please note that no surface disturbing activities will be authorized as a result of this EA. If the leases are issued and if development is proposed, then additional NEPA would be completed . . .” reflect the simple fact that, in the absence of a site specific proposal, BLM cannot make a determination if analysis is even

Number	Commenter	Comment	Response
		<p>Assessment, DOI-BLM-UT-G010-2017-0028-EA, App. E at 205-07 (Jan. 2018) (listing groundwater and surface water as “NI” or “NP” in the IDT Checklist).²</p> <ul style="list-style-type: none"> • SUWA and others commented on the leasing EA and, among other issues, explained that BLM violated NEPA by not analyzing impacts to water resources. <i>See generally id.</i>, App. G. • In response to these comments, BLM explained that it did not need to analyze such impacts at the lease sale stage because it would do so at the APD stage. <i>See, e.g., id.</i>, App. G at 280 (Response 15: “Further analysis of hydraulic fracturing would occur at the APD stage if development of a specific well includes the use of hydraulic fracturing”); <i>id.</i> at 283 (Responses 22, and 23: “Please note that no surface disturbing activities will be authorized as a result of this EA. If the leases are issued and if development is proposed, then additional NEPA would be completed . . .”). • The December 2017 lease sale included UTU-92679 (parcel 46) and UTU-92680 (parcel 47). <i>See</i> December 2017 Final Oil & Gas Lease Sale List at 18.3 BLM approved APDs on these leases in July 2019. <i>See</i> BLM, Environmental Assessment, Finley Resources Inc. Aurora and OPNX Wells, DOI-BLM-UT-G010-2019-0034-EA (July 2019).⁴ BLM did not analyze impacts to water resources in that EA. <i>See id.</i>, App. A at 7-8 (identifying water resources as “NI” and “NP” in the IDT Checklist). 	<p>required, much less conduct meaningful analysis. Case law has made it very clear that BLM is not required to engage in speculative analysis.</p> <p>When BLM receives a site-specific proposal, it reviews the proposal in the context of previous relevant NEPA analysis, including the EIS prepared for the RMP, NEPA analysis prepared for field development plan, etc. If the analysis in those documents adequately identifies the impacts to a resource, and/or if the resource specialist, upon review of the proposal determines there would be no impacts, and/or there is no surface water in the vicinity of the proposal, the specialist would correctly designate that there are No Impacts (NI) requiring detailed analysis, or that the resource is Not Present (NP).</p> <p>If, upon review of the site specific proposal the resource specialist determines, that, without additional mitigation beyond the standard requirements for say, protecting water resources, may be warranted, site specific analysis is performed to identify impacts, and measures that would mitigate those impacts are also identified and added as Conditions of Approval to the development permit.</p> <p>This is not a “shell game” but a logical and efficient means to implement the NEPA process.</p>
9.	SUWA	<p>The Lease Sale EA failed to analyze alternatives through the proper lens of the Tenth Circuit Court of Appeal’s “rule of reason” standard. BLM’s stated purpose and need, and “decision to be made,” for the Lease Sale EA are exceedingly broad. <i>See</i> EA at 3. These sweeping objectives govern BLM’s range of alternatives and dictate the reasonableness of recommended alternatives including those proposed herein by SUWA</p>	<p>The commenter quotes <i>Colo. Env’tl. Coal. v. Dombeck</i>, 185 F.3d (10th Cir. 1999)) 1174: “(T)he number and nature of alternatives must be “sufficient to permit a reasoned choice of alternatives as far as environmental aspects are concerned.” In the case of a leasing EA, each parcel is essentially a stand-alone proposed action, and there are hundreds of possible combinations between a decision to lease all the parcels and a decision to lease none of them. The number of potential combinations increases exponentially when the possibility of removing portions of parcels is factored in. This number of potential “alternatives” constitutes a “reasoned choice” for the decision maker.</p>
10.	SUWA	<p>Moreover, as noted <i>supra</i>, BLM must now follow IM 2010-117 Section III.E, which requires consideration of three NEPA alternatives, at a minimum:</p> <p>The EA will analyze a no action alternative (no leasing), a proposed leasing action (lease the parcel(s) in conformance with the land use plan), and any alternatives to the proposed action that may address unresolved resource conflicts.</p>	<p>Regardless of whether the commenter’s assertion that “Moreover, as noted <i>supra</i>, BLM must now follow IM 2010-117 Section III.E...is correct, the commenter’s assertion of that the IM “requires consideration of three NEPA alternatives, at a minimum” is not. .</p> <p>Due to the nature of the leasing process, BLM is able to resolve most resource conflicts before the nominated lands are parceled out. For instance, before the 2015 Greater Sage grouse Plans were approved, BLM routinely confined parcels to outside of proposed habitat management areas. Once the Plans were in effect, BLM no longer considered leasing in Sage grouse PHMA and GHMA to be a resource conflict. Thus, the wording the commenter quoted from IM 2010-117 was rarely put into effect. BLM also does not consider lands with a high probability for cultural resources to be an unresolved conflict either, due to the non-discretionary application of the NHPA. BLM attaches a notice to such parcels to inform potential lessees that development of the surface of the lease may be constrained, perhaps severely constrained, to protect cultural resources. As far as a “wildlife species avoidance” alternative, as with the previous example with the sage-grouse, BLM can resolve conflicts prior to parceling, if its resource specialists believe that existing laws, regulations, stipulations and policy are not sufficiently protective.</p>
11.	SUWA	<p>The EA Failed to Analyze Site-Specific Impacts... When effects are reasonably foreseeable BLM must analyze them prior to making an irrevocable commitment of resources, as explained by the court in <i>Center for Biological Diversity</i></p>	<p>To clarify, during the NEPA process BLM analyzes <i>the proposed action</i> and <i>alternatives</i>. The analysis <i>identifies</i> impacts to resources that may result from the proposed action. BLM presumes that SUWA means to say that “BLM didn’t conduct site-specific analysis to identify impacts from the proposed action.”</p> <p>The commenter commences it’s discussion by attempting to equate the terms “site-specific” impacts with “reasonably foreseeable impacts” Site specific impacts are not the same as reasonably</p>

Number	Commenter	Comment	Response
			<p>foreseeable impacts. Reasonably foreseeable impacts are those derived in the absence of a site-specific proposal, such as a planning or programmatic document. Leasing is not a site-specific proposal. The BLM can review parcels proposed for lease for potential resource conflicts and address the conflicts by attaching lease stipulations and notices, but any analysis it conducts would be reasonably foreseeable, not site specific. Indeed, in <i>WildEarth Guardians v. Zinke</i>, the court stated (BLM Need Not Conduct Site-Specific Assessments at the Leasing Stage (368 F. Supp. 3d at 66)):</p> <p style="padding-left: 40px;">At the leasing stage, BLM could not reasonably foresee the projects to be undertaken on specific leased parcels, nor could it evaluate the impacts of those projects on a parcel-by-parcel basis. As the EAs explain, BLM did not know “whether or not [a given] lease would be explored or developed.” AR3426. And even if BLM assumed that a given lease would be developed, it could not know the resource to be extracted from the lease—oil or gas—the type of wells to be drilled, and the technology that would be used to drill those wells. See AR11957; AR35366. NEPA does not require an agency to issue these types of wholly speculative assessments at the leasing stage, even assuming an irretrievable commitment of resources.</p> <p>Thus, in the context of a lease sale, “site-specific” documents are those resulting from a more focused review, but the impacts are still “reasonably foreseeable.” The planning and programmatic EISs prepared to analyze proposed resource management plans (RMPs) and their amendments identify the reasonably foreseeable impacts to resources that may occur from oil and gas development. To mitigate the impacts from opening lands to leasing and subsequent development, Lease Stipulations are developed as part of the RMPs.</p> <p>Whereas the decision to open lands to leasing is not an irretrievable commitment of resources, implementing the decision is. As such, when the BLM incrementally implements the RMP decision by proposing to lease specific parcels, its resource specialists review the area <i>potentially</i> affected to determine if there is new information or circumstances, and if there is, if it would substantially change the analysis in the planning documents (keeping in consideration the lease stipulations), and if the reasonably foreseeable impacts are similar both quantitatively and qualitatively to those identified in the programmatic documents, again, keeping in consideration the lease stipulations. If the resource specialists determine no further analysis is necessary they document their finding in the Interdisciplinary Checklist, (Attachment D of the EA). If they determine more analysis is necessary, the reasonably foreseeable impacts are further analyzed in the leasing EA.</p>
12.	SUWA	BLM must analyze all reasonably foreseeable impacts to the Green River designated WSR scenic segment pursuant to NEPA, and Manual 6400, among other laws and policies, prior to offering these leases for oil and gas development	Comment noted. The commenter does not specify which parcels it believes are at issue, but any parcels within a quarter mile of the WSR segment have been deferred.
13.	SUWA	BLM’s conclusion that analysis to identify impacts to the Labyrinth Canyon Wilderness Area is not warranted “because the parcels ‘are designated No Surface Occupancy’ and ‘BMPs from the Moab MLP to address noise and night skies . . . would mitigate impacts to the wilderness area.’” is unsupported and incorrect.	Comment noted. Any parcels in the vicinity of Labyrinth Canyon Wilderness have been deferred.
14.	SUWA	Water Resources and Hydraulic Fracturing Thus, it is all the more important that BLM analyze potential impacts to these “sensitive[s]” and “important” resources including from, but not limited to, hydraulic fracturing, water drawn down, and surface disturbing activities associated with lease development. This also includes the potential impacts to water wells, springs, and seeps related to the aquifer as well as the wildlife and plant species that depend on these resources.	Any hydraulic fracturing methods used is provided at the APD stage. Any assumption of methods used would be speculative as to what impacts to water resources would occur. The amounts of water required is highly variable. The appropriate state approved water right is required for industrial uses associated prior to drilling activities. Indirect impacts as a result of water use is speculative without water management information that is provided at the APD stage. In addition, the permitting of

Number	Commenter	Comment	Response
			<p>water use is beyond the scope and authority of the BLM. The BLM has the responsibility to monitor water impacts to other resources; however, water permitting is bound by state authority. The BLM recognizes that sensitive aquifers, especially those noted, are susceptible to drilling activities. The MLP document provided analysis of these impacts, and the appropriate lease notices and stipulations are applied as applicable to these areas. The BLM recognizes that the list of impaired waterways is updated every two years per the 305b report. The analysis and identified river segments of the MLP in 2010 was up to date and using the most recent data.</p> <p>In areas outside of the MLP the stipulation SOL-WAT-10: Follow Total Maximum Daily Load (TMDL) recommendations on all current 303(d) listed streams, currently Mill, Castle, and Onion Creeks per the 2016 report.</p> <p>Considerations of potential water quality impacts to new rivers as they are listed are taken into account during the leasing and the APD stage by the responsible district and field offices.</p>
15.	SUWA	<p>In the EA, BLM purports to analyze impacts to Capitol Reef National Park. <i>See</i> EA at 54-55. However, this “analysis” constitutes nothing more than stating that the “sights and sound from development could be seen and heard in the Park” and that dark night skies may be impacted. <i>Id.</i> at 55. On this point, BLM cites to “GIS analyses” from Key Observation Points (KOPs) that, allegedly, determined “there could be viewshed impacts to [the KOPs].” <i>Id.</i> However, the KOPs and viewshed analysis are not identified or provided for public review in the EA. In fact, none of BLM’s data and information relating to these potential impacts is made available in the EA so members of the public cannot independently review it or provide informed and meaningful comments on the information BLM relied upon.</p>	<p>Comment noted. Parcel 034 has been deferred.</p>
16.	SUWA	<p>Moreover, in 2015, BLM proposed leasing for oil and gas development a few miles north of Capitol Reef National Park. <i>See generally</i> BLM, November 2015 Oil and Gas Lease Sale, Environmental Assessment, DOI-BLM-UT-G021-2015-0031-EA (Aug. 2015) (attached). Notably, in that EA, BLM analyzed impacts to a much broader range of resource values including hydrology, water quality, springs and riparian, soils, prime and unique farm lands, threatened, endangered plant species, cultural resources, ACECs, recreation, and visual. <i>See id.</i> Chapter 4. BLM must explain why it thought it was necessary to analyze potential impacts to those resources at that time, but now summarily concludes that such analysis is no longer necessary.</p>	<p>Comment noted. Parcel 034 has been deferred.</p>
17.	SUWA	<p>Importantly, the National Park Service (NPS) protested BLM’s 2015 leasing decision. <i>See</i> Letter from Leah McGinnis, Superintendent, to Jenna Whitlock, Acting State Director (Sept. 16, 2015) (attached). NPS protested the decision because BLM had failed to properly analyze impacts to Wilderness, viewsheds, soundscapes, dark night sky, and air quality. <i>Id.</i> Based, at least in part, on NPS’s concerns, BLM deferred all of the leases located north of the Park. Here, BLM has prepared significantly less analysis and data than the agency compiled in 2015 and thus, its leasing proposal is even less supported now than it was at that time. BLM must provide additional rationale for why leasing—on less analysis—is not arbitrary in light of these facts</p>	<p>Comment noted. Parcel 034 has been deferred.</p>
18.	SUWA	<p>To comply with NEPA, BLM must analyze all reasonably foreseeable cumulative impacts. The Tenth Circuit Court of Appeals recently held that the preparation of a reasonably foreseeable development scenario (RFDS) makes it reasonably foreseeable that the number of wells identified would be drilled, and NEPA therefore requires BLM to consider the cumulative impacts of those wells in its lease sale NEPA analysis. <i>Diné CARE</i>, 923 F.3d at 853. As the Tenth Circuit explained, once an RFDS has been issued, the wells predicted in that document were “reasonably foreseeable future actions.” <i>Id.</i> (citing 40 C.F.R. § 1508.7). Thus, for purposes of NEPA, those reasonably foreseeable wells must be considered in the agency’s cumulative impact analysis. <i>See id.</i> at 853.</p>	<p>The referenced Technical Support Document (TSD) is not a Reasonably Foreseeable Development Scenario (RFDS), which is a tool prepared to provide an assumption for analysis in Land Use Planning. This document was not prepared in accordance with Handbook 3031, Handbook 1624 Planning for Fluid Mineral Resources, or WO Instruction Memorandum 2004-0089 Policy for Reasonably Foreseeable Development (RFD)¹ Scenario for Oil and Gas. To the contrary, the TSD itself specifies that “Data presented in this document account for the use of pad drilling to more accurately estimate levels of surface disturbance. This document is not a new RFD[S] for the Vernal RMP because it does not project future oil and gas development potential, and because it includes information adjacent to but outside of the Vernal Planning Area” (page 2). However, the terms “Reasonably Foreseeable Development” or “Reasonably Foreseeable Development Scenario” tend</p>

Number	Commenter	Comment	Response
		<p>Each RFDS anticipated the drilling of a certain number of oil and gas wells over a certain period of time (e.g., 128 wells over a fifteen year period). For example, in the Vernal RMP RFDS, BLM anticipated 6,530 wells would be drilled over a 15-year period. See Vernal RMP RFDS at A-1. BLM updated this RFDS in 2012 to predict the drilling of 28,417 new oil and gas wells. See Greater Uinta Basin TSD at 10, tbl. 3-2.</p>	<p>to be used loosely to describe assumptions for analysis, as was done in Vernal RMP’s five-year review on pages 5, 10, 19, 36, and 37.</p> <p>The TSD was a snapshot of the reasonably foreseeable future number of wells as of August 2011, during a “boom” cycle for the oil and gas industry. The numbers were used in the 2014 Air Resources Management Study, and several NEPA documents, however later in 2014 the oil and gas industry went into a “bust” cycle. Several projects considered in the TSD have since been dropped and are no longer reasonably foreseeable actions to be considered in a cumulative impact analysis. The dropped projects include:</p> <ul style="list-style-type: none"> • Enduring Resource’s Big Pack EA (664 wells) (Bureau of Land Management Vernal Field Office, 2008), • XTO’s Little Canyon EA (510 wells) (Bureau of Land Management Vernal Field Office, 2008a), • Enduring Resource’s Southam Canyon EA (249 wells) (Bureau of Land Management Vernal Field Office, 2008c), • XTO’s Hill Creek Unit EA (137 wells) (Bureau of Land Management Vernal Field Office, 2009 unpublished data), • Uintah and Ouray Tribal Oil and Gas EIS (4,899 wells) (Bureau of Indian Affairs, 2010), and • Greater Chapita Wells EIS Proposed Action (7,000 wells) (Bureau of Land Management Vernal Field Office, February 8, 2017). <p>In addition, the number of wells in the following projects have been reduced since the TDS was developed:</p> <ul style="list-style-type: none"> • XTO River Bend EA 2013 Decision Record permitted 200 wells, instead of the 484 Proposed Action wells included in the TSD (Bureau of Land Management Vernal Field Office, 2013). Also note that as of August 2019, no wells have been drilled under this EA. • Gasco Final EIS Record of Decision permitted 1,298 wells, instead of the 1,491 Proposed Action wells included in the TSD (Bureau of Land Management Vernal Field Office, 2012c). Also note that as of August 2019, only 4 wells have been drilled and 16 wells have been permitted under this EIS. <p>One project has increased its numbers over those accounted for in the model:</p> <ul style="list-style-type: none"> • EOG’s 22 well North Alger EA was acquired by Koch and the new NEPA decision contains 124 natural gas wells (Bureau of Land Management, 2013). Also note that as of August 2019, no wells have been drilled under this EA. <p>Only two new large development proposals have been reviewed or received by the BLM VFO since 2011:</p> <ul style="list-style-type: none"> • In 2015, the BLM completed the Koch Wild Horse Bench EA, 135 wells (Bureau of Land Management, 2015a). Also note that as of August 2019, no wells have been drilled under this EA. • In 2016, the BLM published a Notice of Intent for the Crescent Point Federal-Tribal EIS, a project that proposed up to 3,925 new wells (Bureau of Land Management Vernal Field Office, 2016a). This project has since been cancelled by the proponent, so no new wells will occur. <p>In all, of the 25,721 wells “foreseen” by the TSD, 13,213 have been dropped by the proponent (Big Pack, Little Canyon, Hill Creek, Tribal EIS, and Chapita), 477 have been rejected by the BLM (XTO River Bend 282 of the total proposed action and Gasco 193 of the total proposed action), and two were approved by the BLM but not implemented by the proponent to the level expected (XTO Riverbend and Gasco). As a result of these overall reductions in foreseeable wells, 28,417 wells projection from the TSD is simply no longer a valid metric to use for analysis and is more than</p>

Number	Commenter	Comment	Response
			double all the producing oil and gas wells currently in the State of Utah. A more reasonable metric would be the number of wells projected in the RFDS and the four development plans requiring EISs since the RMP was approved, less the number of wells drilled since the RMP was approved. That number is 14,448 including 486 wells currently being processed under APDs. If those APDs were considered “present” actions, the number of reasonably foreseeable wells for the Vernal Field Office (VFO) at this point in time would be 13,962.
19.	SUWA	In the EA, BLM failed to analyze the cumulative impacts of the wells anticipated in the aforementioned RFDSs—wells the Tenth Circuit has held are “reasonably foreseeable future actions.” Instead, BLM analyzed only the cumulative impact of 41 wells. <i>See</i> EA at 19, tbl. 4. This inappropriately narrow cumulative impacts analysis violates NEPA.	Table 4 discussed 77 parcels, not 41. It would now be 23 Parcels. That being said, In order to analyze impacts from potential development, the BLM extrapolates the RFDS’s prepared for the RMP and other EIS’s to determine the number of wells to use in the assumptions for analysis, or RFD, for the parcels. The “41 wells” SUWA references was used to analyze indirect impacts from leasing, not cumulative impacts. BLM resource specialists reviewed the parcels and the analysis in the EISs to determine if all reasonably foreseeable impacts were identified in therein.
20.	SUWA	Moreover, in <i>Southern Utah Wilderness Alliance</i> , the Interior Board of Land Appeals (Board) held that BLM violated NEPA when it failed to analyze reasonably foreseeable cumulative impacts to migratory birds prior to approving a vegetation treatment project located in Grand Staircase-Escalante National Monument. <i>See generally</i> IBLA No. 2019-94, at *4-7 (Sept. 16, 2019) (attached). The Board held that BLM was aware of other proposals for public lands near the proposed action that would also impact migratory birds and thus violated NEPA by not analyzing those projects when viewed with the proposed action. <i>Id.</i> at *6-7. The Board’s holding on this point does not tread new legal ground but instead is in accordance with well-established law. <i>See, e.g., WildEarth Guardians</i> , 368 F. Supp. 3d at 76-78; <i>Diné CARE</i> , 923 F.3d at 853; <i>WildEarth Guardians</i> , 2020 WL 2104760, at *9-10	In the case of this EA, BLM is not arguing that the projects the commenter lists are not “past, present, or reasonably foreseeable” actions to consider in a cumulative impact analysis. Rather, BLM’s position is that most of the reasonably foreseeable impacts of those projects were identified in the EISs prepared for the relevant RMPs. An EIS prepared for a Land Use Plan is essentially a cumulative impact analysis of the reasonably foreseeable impacts of development of the lands proposed to be designated as open to leasing.
21.	SUWA	BLM failed to analyze impacts from past actions to the newly designated Scenic WSR Segment and Labyrinth Canyon Wilderness for cumulative impacts.	See the response to comment 13.
22.	SUWA	BLM’s cumulative impact analysis of GHG emissions and the climate lacks necessary information and data.	<p>The commenter has requested that the BLM “analyze and disclose to the public the contribution of its fossil fuel leasing and development decisions to increase in GHG emissions. The requested information is already contained in Section 3.3.2.4 of the EA. The EA specifically states the following:</p> <p style="padding-left: 40px;">Federal GHG emission from coal, oil, natural gas, and liquid natural gas are projected to decrease from the baseline year (2014) by 24.3% and 21.3%, respectively for the 2030 future year normal and high scenarios. Utah’s contribution to regional (Colorado, New Mexico, Utah, and Wyoming) Federal GHG emission increases to 5.7% and 5.6% of the 2030 normal and high scenarios respectively. Utah’s contribution to national Federal GHG emission is projected to be 5.3% for both the 2030 normal and high scenarios.</p> <p>And</p> <p style="padding-left: 40px;">In year 2020, the BLM (nationally) normal and high emissions scenarios track closest to RCP 8.5 in 2020 and between RCP 2.5 and RCP 4.5 in 2030.</p> <p>Climate projections based on the RCP emissions scenarios show a global average temperature increase of 0.9-2.3°C (1.6-4.1°F) for RCP2.5, 1.7-3.2°C (3.1-5.8°F) for RCP4.5, 2.0-3.7°C (3.6-6.7°F) for RCP 6.0, and 3.2-5.4°C (5.8-12.1°F) for RCP8.5 (see Figure 5).</p> <p>The commenter also requests that the BLM consider the changes to carbon sinks or sequestration in the EA. The BLM considered the changes to carbon sinks from development of lease parcels in the Interdisciplinary Parcel Review Team Checklist (Appendix D) and determined that this issue did not require a detailed analysis in the EA. Reasons for this determination include the following:</p>

Number	Commenter	Comment	Response
			<ul style="list-style-type: none"> • Land used change (including changes to sequestration) would be temporary since a lessee is required to reclaim a wellsite and return the land to a condition approximately equal to that which existed prior to disturbance (BLM 2007). • Site specific changes to sequestration cannot be quantified as factors such as vegetation type, amount of biomass, and future weather affecting plant regrowth are unknown at the leasing stage. • The assumed number of acres disturbed (279 acres, Table 4) is a small amount (0.0008%) of the 33 million acres of Federal Lands in Utah and that the temporary changes to carbon sequestration from developing lease parcels is dwarfed by changes resulting from natural variability and other land use changes. As a result, the changes to carbon sequestration from ground disturbing activities are considered negligible. <p>While the BLM is not able to evaluate the site specific direct and indirect impacts to carbon storage until a wellsite is determined, this EA does consider sequestration in the cumulative assessment. For instance, the RCP emissions scenarios discussed in Section 3.3.2.4 include the changes to atmospheric concentrations of GHG's resulting from land use and land cover change. Additionally, the USGS report on Federal Fossil Fuel emissions (USGS 2018) and the EPA annual GHG inventory (EPA 2020), see Section 3.3.2.1, include carbon sequestration from land use and land cover change. The USG report identifies that in 2014 Federal lands sequestered 475 MMT CO₂e, and the EPA GHG inventory identifies 773.5 MMT CO₂e was sequestered in the entire United States in 2018. The EA has been edited to highlight this information.</p>
23.	SUWA	In the EA, it is unclear to what extent BLM has analyzed the 20-year global warming potential (GWP) for CO ₂ and CH ₄ in its consideration of cumulative impacts. <i>See</i> SUWA Comments on March 2020 Lease Sale at 15-17 (explaining that BLM must consider both the 20-year and 100-year GWP of 28 and 84, respectively, to account for the upper-end estimates of fossil methane).	<p>When an RFDS is prepared to use in the analysis of a Land Use Plan, it takes into consideration all wells in the planning area, not just wells on Federal surface and minerals. In addition, cumulative impact analysis is not based on the number of leases or acreage leased, but on the RFDS</p> <p>The BLM uses GWP from the IPCC Fifth Assessment Report without carbon-feedbacks. Specifically, the 100-year time horizon values used for CH₄ is 28 and 265 for N₂O, while values of 84 and 264 are respectively used for the 20-year time horizon. The 100-year time horizon is used to allow for a direct comparison with state and national emissions that are also reported using the 100-year GWP. Both the 20 year and 100-year values are reported for construction and operation emissions (Section 3.3.2.2). Only the 100-year value is reported for combustion emissions since this process converts methane into carbon dioxide (CH₄ + 2O₂ → CO₂ + 2H₂O) and combustion emissions will not be meaningfully different between different GWP time scales.</p> <p>Utah Administrative Code R307-511 requires that oil and gas operators route associated gas to a sales pipeline, combustor, or other VOC control device. This rule effectively reduces the amount of methane directly emitted to the atmosphere from venting. Due to this rule any methane that would have been vented would now be converted to CO₂ through the combustion process at the end-use location or at a flare. The GHG emissions inventories incorporated by reference were produced before the state rule R307-511 went into effect and assume a higher amount of methane would be vented and as a result both the 100-year and 20-year GWP likely overestimate methane emissions for future wells that are developed on lease parcels.</p> <p>The BLM uses GWP's without carbon feedback for the sake of simplicity and transparency to the decision maker and to provide a better comparison with state and national emissions, which do not use carbon feedback. GWP with and without carbon-feedback effects are not necessarily "upper-end" or "lower-end" estimate, as suggested by SUWA. There is large uncertainty in the GWP</p>

Number	Commenter	Comment	Response
			<p>estimates: $\pm 30\%$ and $\pm 39\%$ for the 20-year and 100-year methane GWPs, respectively. Uncertainties related to the carbon feedbacks are large (IPCC 2013). GWPs with carbon feedbacks are within the uncertainty estimates of GWPs without carbon feedbacks, and including them would not substantially change the information provided for the decision maker. Additionally, research (Gasser, et al. 2017) has found that climate-carbon feedbacks only make a small contribution to the climate metrics, and the inclusion or exclusion of feedbacks in the emissions do not greatly change modeled impact results. At present it is not foreseeable that regulatory agencies will use GWP's with feedbacks in the future. As recommended by research (Gasser, et al. 2017), the BLM uses GWP's without carbon feedback to provide simplicity and transparency for the decision maker and to be consistent with state and national emissions, neither of which include GWP values with methane oxidation or carbon-feedback effects.</p>
24.	SUWA	<p>BLM failed to analyze and disclose any end uses other than combustion. In the EA, BLM states that such analysis is unwarranted because the agency “has no authority to direct or regulate the end-use of the produced products and an actual end-use may differ from the assumption used for calculating downstream GHG emissions.” EA at 46. This rationale is unlawful.</p>	<p>The BLM has no information regarding the end use of oil and gas than may be produced from the lease parcels. It is uncertain if produced oil and gas will be used in ways other than combustion, and NEPA does not require the BLM to speculate on all the potential end uses. It is highly likely that at least some or most of the oil and gas will be combusted for energy or heating purposes. This assumption provides a reasonable estimate of potential end use GHG emissions to inform the decision maker. While there is some uncertainty in what the actual end use may be, it is unlikely that the differences in emissions from the portion of oil and gas used for non-combustive purposes would be substantially different to alter the decision.</p> <p>The commenter states that BLM should include emissions from other oil and gas sources and provides a list of different activities or equipment that may produce emissions. All the sources listed by the commenter are already accounted for in the EA. For instance, emissions from pipeline leaks, blowdowns, pigging operations, pneumatics, and malfunctions are already accounted for in the single well emissions inventories. It is unknown at this time what mid-stream facilities would be used for wells developed on lease parcel, so the mid-stream facilities such as distribution pipelines, compressor stations, processing facilities, and gathering or booster stations are accounted for in the cumulative emissions. The number of mid-stream facilities are too numerous to list but there are 24 mid-stream facilities that contribute 846,646 MT CO₂e to the state total emissions listed in Table 8 (EPA 2018). Countless other mid-stream emissions sources are also include in the U.S total emissions and U.S energy sector emissions listed in Table 8 (EPA 2020)</p>
25.	SUWA	<p>The EA fails to analyze the cumulative impacts of GHG emissions from the proposed lease parcels, when viewed with all past, present, and reasonably foreseeable oil and gas projects because BLM improperly narrowed its analysis to the “state and regional” scale. EA at 43.</p> <p>Among other actions, BLM’s cumulative impacts analysis must consider:</p> <ul style="list-style-type: none"> • Oil and gas leases offered and sold by SITLA; • Utah BLM’s leasing over the past years and decades, and its upcoming December 2020 lease sale (for which the agency has already received expressions of interest); <p>And</p> <p>BLM’s leasing outside of Utah, on both regional and national scales, including past sales, other sales presently proposed, and upcoming 2020 leasing (and beyond).</p>	<p>The EA already discloses the cumulative impacts of the other actions, including other state and Federal lease sales, that SUWA lists in their comment (pages 31-32 of SUWA comment). As a point of clarification, lease sales do not produce GHG emissions or authorize emissions producing activities. Emissions only occur after a drilling permit is approved and development occurs on a lease parcel. Estimates of GHG emissions from all (state, Federal, tribal, private) existing wells that have been developed on parcels offered in past lease sales is provided in Table 9. Emissions resulting from the development wells on Federal parcels in the region and nationally are incorporated by reference in Section 3.3.2.1 from the USGS report on GHG emissions from Federal Lands (USGS 2018). Section 3.3.2 quantifies the presently planned and foreseeable emissions that may occur on other state, Federal, tribal, or private lease parcels offered in past, present, and future lease. Specifically, the short-term foreseeable emissions from construction and operation of wells with approved APD’s and the subtraction of emissions from plugging and abandoning wells is estimated to be an increase of 88,997 MT CO₂e construction emissions and a decrease in operation and combustion emissions of 42,154 MT CO₂e/yr and 195,631 MT CO₂e/yr respectively. The APD and plugged well information includes state, Federal, tribal, and private wells. Long-term foreseeable emissions from development wells on lease parcels offered in past, present, and future lease sales is estimated by applying EIA oil and gas production forecasts to scale the emissions</p>

Number	Commenter	Comment	Response
			<p>estimate in Table 9 which includes emissions from state, Federal, tribal, and private wells (see Figure 4). Foreseeable changes to GHG emissions from development on other Federal lease parcels in the region and nationally are incorporated from the BLM's Greenhouse Gas and Climate Change Report (Golder 2017) and are compared to the RCP scenarios used for predicting climate change impacts.</p> <p>The BLM has determined that the use of reasonably foreseeable development scenarios (RFDS) from field office RMP's to estimate future oil and gas emissions is not the best way to estimate aggregate GHG emissions that may result from oil and gas leasing actions. There are several reasons why this is not the best approach for estimating future emissions in Utah. First, the RFDS is an assumption for analysis when preparing the EIS for the RMP and is not based on actual development proposals. Second, the average number of wells drilled each year in Utah (172 for the 2015 to 2019 period) is substantially less than the number of wells projected each year in BLM Utah field office RMP's (478-637 over 15 to 20 years) and the RFDS substantially overestimates present real-world conditions. Third, the timeframe for an RFDS does not match well with the cumulative timeframe for the proposed action (i.e. 30-year life of wells). Based on current oil and gas development levels some RFDSs could take 100 or more years to fully develop the RFDS and this timeframe is unwieldy for a cumulative assessment. It is probable that regulations, emissions control technology, and other factors could easily change over such a long timeframe. Instead, the BLM estimates foreseeable oil and gas related GHG emissions by applying the U.S. Energy Information Administration oil and gas production growth forecasts to emissions from existing oil and gas sources. This is a better method for estimating foreseeable emissions in Utah since the EIA forecasts account for the latest information on economic growth and it covers a timeframe that more closely matches the 30-year time period used for the cumulative analysis.</p> <p>Also, see the response to comment 18.</p>
26.	SUWA	In addition to including quantitative estimates of the total GHG emissions resulting from its approvals, BLM must also assess the ecological, economic, and social impacts of those emissions, including assessing their significance	<p>SUWA is stating that the BLM "must analyze the significance and severity of [GHG] emissions" (page 34 of SUWA comment) and that the social cost of carbon (SCC) or carbon budgeting are two tools that could be used "to determine the significance of emissions under NEPA."</p> <p>GHG emissions from a single project do not produce a direct or indirect environmental impact that is distinguishable from natural variability. Even the large GHG emissions reduction due to issues related to the COVID-19 pandemic have not shown a measurable change in atmospheric CO₂ concentrations (NOAA 2020). The National Oceanic and Atmospheric Administration states the following:</p> <p style="padding-left: 40px;">"For us to be able to detect the drop in emissions caused by the pandemic it needs to be large enough to stand out from natural CO₂ variability caused by how plants and soils respond to seasonal and annual variations of temperature, humidity, soil moisture, etc. These natural variations are large, and so far the "missing" emissions do not stand out (NOAA 2020)."</p> <p>Similarly, an increase in emissions from a single project would not stand out compared to natural variation. For these reasons, the BLM uses GHG emissions as a proxy for the direct and indirect environmental impacts. The climate change impacts analysis is presented with the cumulative assessment since it is the global aggregate GHG emissions over time that produces environmental impacts.</p>

Number	Commenter	Comment	Response
			<p>See response to comment 27 regarding SCC.</p> <p>The BLM has considered the use of carbon budgeting and provided reasons in Section 3.3.1.2 for why such a tool is not useful for evaluating GHG emissions in this EA. After reviewing SUWA's comment regarding the use of carbon budgets the BLM still concludes that carbon budgets are not useful yet for evaluating impacts from GHG emissions. As recognized by SUWA, there is substantial uncertainty in the size of carbon budgets and while the budgets may be much smaller than anticipated they may also be much larger. Additionally, the EA already presents the projected change in global temperature resulting from GHG emissions in Section 3.3.2.4, see Figure 5. The EA also already highlights in Section 3.3.2.3 the importance of limiting emissions to reduce climate impacts that could be experience if global warming exceeds 1.5°C.</p>
27.	SUWA	<p>In the EA, BLM does provide quantitative monetary estimates of purported benefits of oil and gas leasing and development. <i>See</i> EA at 47-54 (analyzing potential impacts to “social and economic conditions”). For example, the EA considers the “socioeconomics” of offering the leases for development and concludes there would be “generation of revenue from the lease sale.” EA at 49. This includes \$9.8 million in 2019 and \$156.9 million from 2003 to 2019. <i>Id.</i></p> <p>The EA estimates that oil and gas crews will spend money in the local or regional communities. <i>Id.</i> BLM further recognizes the “[p]ositive indirect impacts” of leasing and development and explains that “bonus bids . . . annual rent fees . . . and royalties . . . may provide substantial income to county governments for schools and other expenditures.” <i>Id.</i> The EA also provides information regarding “oil and gas employment effects.” <i>Id.</i> at 50, tbl. 14.</p> <p>Because BLM has analyzed these so-called “benefits” of oil and gas leasing and development it must also disclose the costs. <i>See, e.g., High Country Conservation Advocates</i>, 52 F. Supp. 3d at 1190-91. The Social Costs of Greenhouse Gases are tools that could be used to fulfill this required analysis. As SUWA has previously explained in a similar context, if an agency monetizes the economic benefits of fossil fuel extraction, it must then also monetize the costs of carbon pollution. <i>See</i> SUWA Comments on March 2020 Lease Sale at 21-29 (making this same point, with citations to numerous cases and regulations).</p>	<p>The language quoted in the comment does not imply that any socioeconomic impacts would be universally “beneficial” to any specific region. The word “beneficial” was used in reference to specific industrial sectors that would likely experience increased revenues should increases in activity within the oil and gas sector occur. The paragraph has been edited to better convey the specific economic meaning. In addition, the word “positive,” as quoted, was used in the mathematical sense of the word. Again, no generally “positive” effect to the overall region was implied. The paragraph was edited to make this abundantly clear. Whether economic impacts are viewed as beneficial or detrimental depends on the specific viewpoint of the observer. The present analysis does not presume a specific viewpoint and does not judge impacts to be benefits or costs in the universal sense of those terms.</p> <p>The BLM typically provides for an economic impact analyses within NEPA, but not a cost-benefit analysis. Terms such as “benefits” and “costs” can have different and very specific definitions within a discipline, such as economics, which can differ from what the terms may mean in what a person may consider in an "ordinary language sense". While NEPA may use terms such as "benefits", the economic analyses actually conducted are regional economic impact analyses that are the essential effects associated with production or any other forms of economic activities (often expressed in terms of employment, income, and output), and must not be conflated with economic benefits. Net economic benefits are obtained in financial or economic efficiency analyses, not economic impact analyses. The distinction is anything but semantics, because the principles of cost-benefit analysis prohibit mixing economic impacts into the net benefit calculation.</p> <p>Whereas an economic impact analysis evaluates changes in economic activity, a cost-benefit analysis is an approach used to determine economic efficiency by focusing on changes in social welfare by comparing whether the monetary benefits gained by people from an action/policy are sufficient in order to compensate those made worse off and still achieve net benefits (Watson et al. 2007, Kotchen 2011). To summarize, cost-benefit analyses and regional economic impact analyses are very different methods that are focused on quantifying or monetizing social welfare and economic activity, respectively. These analyses are based upon differing assumptions and terminology and are not interchangeable. Based upon their views and values, people may perceive this increased economic activity as a "positive" impact that they want to occur; however, it is very distinct from being an "economic benefit" as defined in economic theory and methodology (Watson et al. 2007, Kotchen 2011). Additionally, another person may perceive increased economic activity as a "negative" impact due to potential in-migration of new people, competition for jobs, and concerns that newcomers will change the sense of community and community qualities that are</p>

Number	Commenter	Comment	Response
			important to herself/himself. Therefore, it is critical to distinguish perception of an economic impact as different from a cost or benefit as defined in a cost-benefit analysis.
28.	SUWA	<p>In support of this recreational and tourism spending analysis, BLM prepared Table 15, which—allegedly—provides “recreation and tourism employment effects.” <i>Id.</i> at 52, tbl. 15. Not so. That table provides data—based on an assumption of \$100,000 of new recreational and tourism spending—regarding “employment effects,” “labor income effects,” and “output effects.” <i>Id.</i> In support of this recreational and tourism spending analysis, BLM prepared Table 15, which—allegedly—provides “recreation and tourism employment effects.” <i>Id.</i> at 52, tbl. 15. Not so. That table provides data—based on an assumption of \$100,000 of new recreational and tourism spending—regarding “employment effects,” “labor income effects,” and “output effects.” <i>Id.</i> Notably, prior to providing this table of data in the EA BLM also cautioned: “it is understood that none of the figures shown below [<i>i.e.</i>, Table 15] will accurately reflect current economic conditions.” <i>Id.</i> at 49. The social cost of carbon and methane tools, had BLM used them, would have added necessary context, detail and relevance to BLM’s data—data which as currently presented is completely untethered from any actual impacts analysis.</p> <p>Among other things, BLM never explains (1) why it chose \$100,000 as its baseline, (2) what the data in Table 15 actually represents (or is meant to represent, or how it is supposed to be interpreted), (3) how that data is relevant with regard to oil and gas leasing and development, and, importantly, (4) how the data is being used to inform BLM’s decision regarding potential impacts of leasing and development. Instead, BLM presents the data and concludes: “Where recreation and tourism play a greater role in a county’s economy, the economic effects from an increase or reduction in spending would be greater than in the study area on average. The opposite is also true.” <i>Id.</i> at 52. This is merely a recognition of basic economic principles, it is not NEPA analysis.</p>	<p>This is an incorrect characterization of regional economic impacts modeling. The section in the EA does not merely provide “data.” It shows the estimated regional economic impacts on a specific economic sector or group of sectors from a specific dollar amount of increased spending (“output”) within that region. Because of uncertainty as to what economic activity and the magnitude of recreation and tourism spending will occur in the future, rather than attempting to predict specific dollar amounts of changes in activities, the BLM has provided county-level results from regionally-specific models showing what the expected impacts from \$100,000 in new spending on recreation and tourism activities would be in each county, based on existing economic data and economic relationships. If future, realized economic activity within the group of industrial sectors that make up recreation and tourism should increase or decrease, it is simple to multiply actual changes in economic output by the modeled impacts in order to estimate the total effect. Adding additional information would not change the uncertainties inherent to extremely unstable economic conditions, and tying the model to specific estimated future economic activity would not make the output more accurate. In fact, doing so would make the results from the analysis less informative because if the predicted future activity were to vary from what was specifically anticipated, the analysis would be incorrect as a result.</p> <p>(1) The choice of \$100,000 has no special meaning, and it is not a baseline; it is a modeled level of marginal output within specific economic sectors. To make the models’ results more useful to stakeholders, it’s an amount that’s easy to scale. (2) The meaning of the figures is explained in the text. (3) The relevance of the models’ outputs to oil and gas is explained: “In some parts of the study area, there is concern about effects on recreation and tourism activities due to oil and gas development.” (4) The models’ outputs inform BLM’s decision in the same way that any description of possible impacts to any resource would inform a decision. In addition, informing a decision is only part of the purpose of NEPA; NEPA analyses also inform the public as to possible impacts to resources that could occur under a proposed action and alternatives. This section informs stakeholders within the counties analyzed as to potential economic impacts.</p> <p>The details for each county’s economic model are included in the administrative record for the decision.</p>
29.	SUWA	BLM is in violation of its statutory duty to develop a comprehensive management Plan for the OST.	This is beyond the scope of commenting on the EA, However, page VII of the Comprehensive Management Strategy (CAS States: “Although the National Trails System Act (NTSA) designating the Old Spanish National His)toric Trail does not specifically require the development of a planning document, Section 5(f) of the Act requires that a comprehensive plan be developed for all designated national historic trails. This administrative strategy will function as the core component of the planning portfolio for the Old Spanish Trail comprehensive strategy, focusing on administration. The federal agencies managing portions of the national historic trail may develop management documents according to their agency policies and guidelines, as appropriate, and in conformance with National Trails System Act mandates. The National Trails System Act also requires trail administrators to consult with federally recognized tribal governments and appropriate federal, state, and local agencies in the planning and development of the trail, and to work with private landowners for protection and promotion of the trail. “
30.	SUWA	Because the CAS was not accompanied by an EIS or an EA, management decisions like the one to lease these 77 parcels are made piecemeal, without adequate consideration of the direct, indirect, short-term, long-term, and cumulative impacts on the Trail. Under NTSA and NEPA alike, this	See the response to comment 41. NEPA analysis will be conducted as management plans for the various segments are developed. Only a handful of the now 23 parcels in the lease sale are in proximity to the OST.

<i>Number</i>	<i>Commenter</i>	<i>Comment</i>	<i>Response</i>
		violates the statutory obligations of the Department of the Interior (DOI), and of the BLM and NPS as delegated OSNHT co-administrators.	
31.	SUWA	Failure to Comply with BLM's Stated Policies in 6280 Manual. The Resource Management Plans for the Moab Field Office area, the Richfield Field Office area, and the Master Leasing Plan for the Canyon Country District Office make little mention of the existence, status, or management of the OSNHT, and do not refer to any inventories required by Manual 6280.	This is beyond the scope of analysis in the EA.
32.	SUWA	<p>The statement in the CAS The trail corridor is informally considered by the NPS to lie five miles on either side of the centerline of the trail alignment to include the nearest elements of the view shed, parts of the cultural landscapes, landmarks, and traditional cultural properties near the trail. The BLM follows direction from their trail administration manual to establish a trail corridor" an unresolved conflict that contradicts the NTSA's intent to uniformly assess and establish Trail corridors that protect Trail resources, qualities, and values. The BLM should adopt an interim management corridor of five miles on either side of a Trail centerline until official corridors are established on BLM lands.</p> <p>Twelve parcels are within the Old Spanish Trail, and 24 more are within five miles of it. The BLM failed to adequately consider impact to the Resources, Qualities and Values of the OST. These parcels' proximity to the OSNHT means that any development could greatly disturb the viewshed from the trail. Viewshed analysis from the trail should be conducted under the procedures detailed in BLM Policy Manual 6280,83 and these parcels should not be leased until it can be completed.</p>	<p>The BLM 6280 manual states that a corridor should encompass "the area of land that is of sufficient width to encompass national trail resources, qualities, values, and associated settings." Setting does not include a viewshed as far as the eye can see, but the distance in which an element might be intrusive. Whereas the nature of a National Park allows for greater protection of viewshed, the multiple use mandate of the BLM confines it to a more conservative setting. For most segments of the trail, five miles from the centerline would be excessive</p> <p>All parcels in in Grand and San Juan Counties have been deferred. Lease notices have been added to all remaining parcels within two miles of the trail, to inform the potential lessee of the conflict</p>
33.	SUWA	<p>Failure of the EA to Adequately Consider Impacts to the Resources, Qualities and Values of the OSNHT. For example, the EA proposes to apply lease stipulation UT-S-395 to certain parcels in proximity to HPS and HPRS. Not only is this stipulation insufficient to protect OSNHT resources, qualities, and values, it is unevenly applied—there is no clear explanation why it has been applied to some parcels and not others.</p> <p>UT-S-395 requires a visual assessment of certain HPS and HPRS within two miles of certain lease parcels. As discussed above, because a CMP, an established Trail Corridor, and an inventory of resources, qualities, and values are all lacking, limiting the evaluation distance to two miles is unwarranted. Further, UT-S-395 refers to three HPS: Kane Springs, Looking Glass Rock, and the Colorado River Crossing near Moab. It also refers to three HPRS: Moab Trail, Mule Shoe, and Blue Hills. However, the stipulation is attached to some parcels but not to other similarly situated parcels, without explanation or discernable reason.</p>	Stipulation 395 derives from the Moab MLP, and thus, it was only applied to parcels within the MLP area. Those parcels are now deferred.
34.	SUWA	There is little to no analysis in the EA regarding the comprehensive slate of resources, qualities, and values of the Trail and how each might be affected by the proposed leases; BLM merely refers the public back to previous documents, each of which also lacked comprehensive analysis of effects to the Trail, thereby failing to satisfy NEPA's hard look requirement. For example, the Lease Sale EA refers the public back to the September 2019 lease sale's final EA for discussion of the potential visual impacts to the parcels bordering on the OSNHT and incorporates that discussion. However, the September 2019 lease sale concerned a different set of lease parcels. BLM cannot adequately assess the direct, indirect, and cumulative effects of this current set of lease parcels on OSNHT or its viewshed without evaluating the new set of parcels. References back to the Moab MLP or Richfield RMP are inadequate to assess the cumulative impact of these lease parcels to the Trail as a complete, statutorily designated unit.	<p>"Comprehensive analysis" seems to be equivalent to "site-specific analysis," which is not practical nor required at the lease sale stage. However, the "reasonably foreseeable analysis" conducted on a particular set of parcels and the resulting Lease Notices derived from that analysis is applicable to similar parcels , i.e. those proximate to high potential segments and sites.</p> <p>The commenter's assertion that the cumulative impact analysis area (CIAA) for impacts to the OST must be the entire trail defies the rule of reason. A reasonable CIAA might be an entire high potential segment. The cumulative impact analysis within the Moab MLP discussed the high-potential segments potentially affected by development of the leases in question.</p>
35.	SUWA	BLM Has Failed to Disclose, Analyze, or Mitigate Impacts to Listed, Sensitive and other Significant Wildlife Species and Habitats in Violation of NEPA and the Endangered Species Act	The BLM prepared an issue-based EA in accordance with the NEPA Handbook H-1790-1, sections 6.4 and 6.4.1. CEQ regulations require NEPA documents to concentrate on the issues that are truly significant to the action in question, rather than amassing needless details (40 CFR 1500.1(b)).

<i>Number</i>	<i>Commenter</i>	<i>Comment</i>	<i>Response</i>
			<p>Section 7 Consultation on the impacts of fluid mineral development has been completed on relevant Resource Management Plans and the Moab Master Leasing Plan. The US Fish and Wildlife Service determined that fluid mineral development would not jeopardize the continued existence of the any listed species nor result in adverse modification to Critical Habitat. Lease Notices that establish mitigation measures to reduce or eliminate impacts to the species and its habitat have been included for all proposed parcels located within suitable habitat or designated critical habitat for the species. Additional site-specific Section 7 consultation would be required at the development stage.</p> <p>The BLM has been in coordination with the USFWS. On July, 28, 2020, the USFWS agreed with the NLAA determination.</p> <p>Lease notices and stipulations will also be attached for Sensitive Species as well as wildlife in general to reduce or eliminate impacts.</p>
36.	SUWA	The EA acknowledges only in passing that development of the proposed parcels would have significant adverse impacts on deer, elk, and pronghorn habitats, but fails entirely to disclose or analyze those impacts:	BLM will place appropriate notices and stipulations for each parcel to reduce or mitigate habitat damage for the species present. Site specific analysis would need to occur before impacts can be determined. BLM is working with UDWR to better study and delineate habitat types.
37.	SUWA	BLM must analyze whether habitat loss within white-tailed prairie dog colonies could affect black-footed ferret recovery and/or reintroduction efforts.	All lease parcels are located outside the Coyote Basin Primary Management Area. Black-footed ferrets have not migrated outside of the Management Area and there are no foreseeable plans to establish additional reintroduction areas within Utah outside the Coyote Basin Management Area. Therefore, there is no potential impacts to black-footed ferret recovery and/or reintroduction efforts.
38.	SUWA	BLM failed to make a reasonable and good faith effort to identify historic properties... BLM acknowledges in the EA that a “[lease sale] is also considered to be an irretrievable commitment of resources because BLM generally cannot deny all surface use of a lease unless the lease is issued with a no surface occupancy (NSO) stipulation.” Accordingly, BLM must undertake legally sufficient Section 106 identification efforts now instead of at the APD stage.	<p>The BLM has conducted a reasonable and good faith effort to identify historic properties. As part of the agencies efforts to comply with Section 106 of the NHPA the BLM examined existing known information about cultural resources within the parcels and solicited additional information from consulting parties and tribes. This approach used in this sale complies with Appendix E of the State Protocol Agreement between the Bureau of Land Management and the Utah State Historic Preservation Office, executed on January 2, 2020. Furthermore, conducting extensive Class III surveys of proposed parcels associated with industry expressions of interests for quarterly sales is not reasonable given the large areas of land, the uncertainty that any development will occur on parcels that do sell, and the time and cost which would be associated with such an endeavor over such a short period of time.</p> <p>At the time of leasing the BLM cannot predict where or if development will occur on parcels. Therefore, the agency implements a “phased approach” to Section 106, as provided for in 36 CRF 800.4(b)(2), which states, “where alternatives under consideration consist of corridors or large land areas, or where access to properties is restricted, the agency official may use a phased process to conduct identification and evaluation efforts.”</p> <p>This phased approach was determined appropriate for Section 106 compliance by IBLA as part of the Mandan, Hidatsa, and Arikara Nations appeal in 2005 (IBLA 2005-47). IBLA 2005-47 states that an examination and comprehensive analysis of existing cultural resource records, previous tribal consultation, ethnographic data, and archeological and historic literature specific to the area under review constitutes a meaningful evaluation under the Section 106 process. Such an analysis can lead to application of NHPA protective stipulations for sensitive cultural resources. Additional cultural resource surveys and compliance under Section 106 may be taken at the APD stage when</p>

Number	Commenter	Comment	Response
			<p>the area of ground disturbance is known as part of a phased approach permitted under 36 CFR 800.4(b)(2) and 36 CFR 8006 (a)(3).</p> <p>A phased approach has also been supported by the Advisory Council on Historic Preservation for past lease sales (See <i>Review of “no adverse effect” finding Bureau of Land Management Oil and Gas Lease Sale for December 2019 San Juan County, Utah</i> Letter from ACHP dated November 21, 2019).</p> <p>Additionally, the Cultural Resources Protection Stipulation which is attached to all parcels also states that, “BLM will not approve any ground-disturbing activities that may affect any such properties [historic properties] or resources until it completes its obligations under applicable requirements of NHPA and other authorities. The BLM may require modification to exploration or development proposals to protect such properties, or disapprove any activities that is likely to result in adverse effects which cannot be successfully avoided, minimized, or mitigated.”</p> <p>Therefore, the analysis that the BLM completed for this undertaking is legally sufficient as it complies with law, policy, regulation, and guidance associated with Phased Undertakings, as demonstrated above.</p>
39.	SUWA	BLM Failed to conduct meaningful tribal Consultation	<p>The BLM considers the tribal consultation conducted for this undertaking meaningful and adequate, given the timeframe required for this project while also taking the COVID-19 pandemic into account. The BLM has followed the guidance issued by the Advisory Council on Historic Preservation (ACHP) and BLM for tribal consultation during the pandemic. As part of this undertaking, the BLM invited 44 tribes to participate in consultation via certified letter mailed to April 3, 2020. The BLM received responses from three Native American Tribes, the Hopi, the Paiute Indian Tribe of Utah, and the Yselta del Sur Pueblo. The Paiute Indian Tribe of Utah and the Yselta del Sur Pueblo indicated they have no concerns with the proposed undertaking. The Hopi Tribe responded on April 17, 2020 requesting additional information, including a draft cultural resources report, which the BLM mailed to the tribe on June 15, 2020. At that time the Hopi did not request any additional information or consultation meetings. The BLM received a response on July 13, 2020 from the Hopi. The BLM also received a response from the Pueblo of Santa Ana on August 3, 2020. Consultation is ongoing.</p>
40.	SUWA	BLM Failed to Make Publicly Available Information Related to Its Leasing Proposal. SUWA repeatedly requested that BLM provide the referenced information for public review but BLM failed to do so. <i>See, e.g.</i> , E-mails from Landon Newell, SUWA, to Michael Gates, BLM Fillmore Field Office Manager (July 2, 2020; July 6, 2020) (explaining that certain hyperlinks were broken and requesting the documents) (attached).	<p>BLM’s ePlanning NEPA register, where many of the documents referenced can be found, underwent an upgrade right at the time the EA was released, and many of the hyperlinks were broken. However, the project page provided an eMail address the commenter should have contacted for any needed information. Had the commenter used that email address, a correct link to the documents could have been sent, or the request for a document forwarded to the correct party.</p>
41.	SUWA	BLM Failed to Take a Hard Look at Impacts to Arches and Canyonlands National Parks. Oil and gas development on the landscape immediately adjacent to these national parks therefore poses a great risk to the very resources and experiences that draw those millions of visitors every year. Light and air pollution, industrial traffic and climate change resulting from oil and gas development all have the ability to permanently affect this one-of-a-kind landscape.	<p>Parcels proximate to Arches and Canyonlands National Parks have been deferred.</p>
42.	SUWA	BLM needs to apply UT-LN-125 Light Pollution (nightskies) lease notice to all parcels in the September 2020 lease sale. Page 298 of the EA indicates that UT-LN-125 will be applied to all parcels but it is not. It needs to be consistently applied, including to all the June 2020 parcels.	<p>Page 298 of the EA was part of the Interdisciplinary Checklist for the parcels within the Moab Field Office. Those parcels have been deferred. There was no intent to add the Lease Notice to parcels in the other field offices.</p>
43.	SUWA	The health of our national parks relies on agencies accurately assessing the risks of nearby development. This also requires close consultation and coordination among the agencies. It is not clear that meaningful consultation with the NPS has taken place for this lease sale. Sharing a memo	<p>The BLM coordinated with the NPS Air Resources Division on April 13 to April 17, 2020. The BLM and NPS Air Resource Division discussed incorporating by reference the analysis from similar actions such as the Moab MLP, West Fertilizer Project, and the December 2019 lease sale.</p>

<i>Number</i>	<i>Commenter</i>	<i>Comment</i>	<i>Response</i>
		with a preliminary list of parcels and associated GIS files does not equate to meaningful stakeholder engagement or coordination. BLM indicates that consultation with NPS led to the addition of two lease notices to parcel 136 addressing the NPS's concerns about the OSNHT. However, there are many more parcels near Arches and Canyonlands National Parks that if developed could have significant direct, indirect and cumulative impacts to the parks and should be considered in close coordination with park managers prior to the lease sale. At a minimum, all parcels in the lease sale should include UT-LN-163, to notify the NPS at the APD stage. Currently, only parcel 136 has that lease notice.	At that time, the NPS Air Resources Division did not request any additional new air analysis for the September parcels.
44.	SUWA	BLM Should Not Move Forward with Leasing During the COVID-19 Pandemic	This is beyond the scope of commenting on the EA.
45.	Institute for Policy Integrity (IPI)	BLM must manage its lands for a variety of uses, not primarily for oil and gas development. One of the stated goals of FLPMA is to "preserve and protect certain public lands in their natural condition." As the Tenth Circuit has held, "[i]t is past doubt that the principle of multiple use does not require BLM to prioritize development over other uses."	Decisions about how lands would be managed under multiple-use are made at the Land-Use-Planning Stage. It is beyond the scope of the EA, to reassess the decisions made for the RMPs and Moab MLP.
46.	IPI	In the past, the presence of mineral leases has foreclosed BLM from managing parcels for wilderness characteristics. In several resource management plans (RMPs) finalized by BLM Utah, the presence of mineral leases prevented the protection, preservation, or maintenance of wilderness characteristics. This concern is not merely hypothetical. As recently as 2019, areas directly bordering parcels proposed for lease in this sale were designated as wilderness, such as the Lower Last Chance Wilderness Area that borders parcel 34. BLM violates FLPMA's multiple-use mandate by offering numerous tracts for lease that have very low development potential, yet have other valuable public uses that are equally important under federal law. In light of its multiple-use mandate, BLM should not offer low-potential lands for leasing, and must manage some public lands for distinct—and potentially more important—land uses.	This is beyond the scope of the analysis in the EA. Whether lands are available for lease is determined in the Land Use Planning Process. Once the Land Use Plan has been approved, it is not a violation of FLPMA to implement it by offering leases in areas open to leasing under the Plan, regardless of low potential or the existence of wilderness characteristics. During the Land Use Planning process, BLM can make a determination if certain lands are valuable as "Natural Areas" and close them to leasing, at least for the life of the Plan. The presence of existing leases does not prevent such a designation, it simply adds the risk that the natural area may be impacted by oil and gas development. In an area with low potential for development, it's probable that the existing leases will expire without an attempt to develop them.
47.	IPI	BLM acknowledges that many of the parcels to be offered have low development potential, and should have assessed a more limited lease sale alternative that avoids multiple-use conflicts....	See the responses to Comment 45. "Multiple-use conflicts" are resolved in the Land Use Planning process, not the NEPA analysis prepared to implement the Land Use Plan.
48.	IPI	In the Moab Field Office, many parcels identified for leasing have low development potential yet pose several multiple-use conflicts, including recreation, scenic value, wildlife protection, cultural and tribal resources, and more... Moab Field Office parcels of particular note for their recreational and other multiple-use values include parcels 38; 39; 45; 48; 66; 68–80; 83–88; 90; 97; 111–113; 116–124; 132–134 and 136.37 Moreover, some of the parcels are within ten miles of Canyonlands or Arches National Parks. ³⁸ Developing these areas for oil and gas would have negative effects on the environmental, scenic, and recreational value of these parcels. BLM attempts to minimize such detrimental environmental effects in the EA by noting that the MLP calls for no surface occupancy (NSO) and controlled surface use (CSU) stipulations on many of these parcels. However, BLM does not offer any assurance that waivers, exemptions, or modifications to these NSO and CSU stipulations will not be granted. In fact, the Moab MLP itself states that such exemptions, waivers, or modifications are possible and may be granted. The Government Accountability Office recently found that BLM rarely involves the public in decisions to grant waivers, exemptions, or modifications to lease stipulations. In other words, even if BLM claims here that the land will be free of surface disturbance or occupancy, the public has no guarantee that the leases will remain subject to these stipulations, and the public may never be notified if or when such protections are lifted.	Comment noted. All parcels within the MLP have been deferred.
49.	IPI	BLM's own analysis in a different proceeding reveals environmental sensitivities warranting cessation of recreational activities in the very same areas offered for mineral leasing here... On May 29, 2020, BLM requested input from the public on "a proposal to protect wildlife and raptors	Comment noted. The relevant parcels have been deferred.

Number	Commenter	Comment	Response
		<p>though restricting roped and aerial activities within Mineral and Hell Roaring Canyons.” The approximately 10,000-acre area identified for potential restrictions provides habitat for golden eagles, Mexican Spotted Owl, desert bighorn sheep, and other wildlife. BLM states in the news release that recreational activity in the Mineral and Hell Roaring Canyons has increased in recent years, leading to impacts to wildlife habitat, and that BLM is developing a proposal “to help mitigate this conflict.”</p> <p>Yet, this EA proposes new oil and gas leases in about half of the proposed restricted aerial and roped activity parcels. These parcels include numbers 71 through 78. It is very hard, if not impossible, to reconcile BLM’s two competing proposals: one that would restrict roped recreational activity due to concerns for wildlife, and the other (in this EA) proposing new mineral leasing and extraction in the exact same parcels</p>	
50.	IPI	<p>BLM Fails to Consider a Deferred Leasing Alternative That Would Offer Fewer Parcels for Sale Now, and Defer Other Parcels to a Later Date After Conducting Further Analysis...Considering a Deferred Leasing Alternative Meets FLPMA and MLA Requirements...the MLA requires BLM to account for conservation and specifically consider the timing—including potential for delay—of mineral lease sales. Specifically, the MLA requires the agency “to [e]nsure the sale of the production of such leased lands to the United States and to the public at reasonable prices, for the protection of the interests of the United States ... and for the safeguarding of the public welfare,” including the “prevention of undue waste.” As the Supreme Court explained, the MLA emphasizes “[c]onservation through control,” with “one of the main congressional concerns” being “the prevention of an overly rapid consumption of oil resources.”</p>	<p>Refer to section 2.2 and section 2.5. Since each parcel is an independent, though similar, action the BLM at the end of the EA process could choose to either lease or defer any parcel in the EA’s decision record (see Section 1.2). The Interior Board of Land Appeals has upheld this rationale in finding that subsumed in a no action alternative is consideration of not leasing any or all parcels (Biodiversity Conservation Alliance <i>et al.</i>, 183 IBLA 97, 124 (2013)). The No Action alternative allows the authorized officer to resolve resource conflicts by deferring or removing parcels from the lease sale, before offering those parcels for sale. Refer to BLM response 2, that the BLM did remove 10 additional leases from the sale after coordination with the State of Utah.</p>
51.	IPI	<p>BLM Must Account for Option Value by Assessing a Deferred Leasing Alternative, Given the Irreversible Nature of Drilling and Development... There Is Option Value to Delaying Oil and Gas Lease Sales...The EA Should Have Considered a Deferred Leasing Alternative and Analyzed Numerous Uncertainties That Weigh Against Fossil Fuel Leasing</p>	<p>This would be the same as the no leasing alternative.</p>
52.	IPI	<p>If BLM learns new information regarding, for instance, environmental or safety hazards, developmental value, recreational value, carbon sink value, or cultural significance, it is much more difficult (if not impossible) to act on this information when land is already leased.</p> <p>In light of the uncertainty and near-irreversibility associated with leases for mineral development, BLM should account for option value, or the informational value of delay, at the lease sale stage by offering only high-potential lands, if any, in lease sales, and deferring other parcels that pose potential resource conflicts. Consideration of option value requires that BLM determine when and where exercising its perpetual options would be most socially opportune, including by accounting for environmental, social, and economic ramifications. The value associated with the option to delay can be large, especially when there is a high degree of uncertainty about price, extraction costs, and the social and environmental costs imposed by drilling—each of which are present here with respect to the EA.</p>	<p>Leases will be in compliance with the Land Use Plans. If there is an amendment to the land use plan and additional stipulations or change in laws or regulations, those will be attached to the lease or become as Condition of Approval at the APD stage. 43 CFR 3162.5-1 (a) and (b), will not allow operations to result in undue damage to surface or subsurface resources or surface improvements. Refer to section 1.3.</p> <p>Despite conveying the right to develop the oil and gas resources, the act of leasing does not authorize any development or use of the surface of lease lands without further application by the operator and approval by the BLM. In the future, operators 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. If an APD is received, the BLM would conduct additional site-specific NEPA analysis and consider the lease notices before deciding whether to approve the APD, and what conditions of approval (COA) should apply.</p>
53.	IPI and Rick Jones	<p>BLM’s Failure to Consider the Economic Impacts of Delaying Parcels for Lease Sale Violates Its Obligation to Obtain “Fair Market Value” for the Use of Public Lands... BLM Is Highly Unlikely to Receive “Fair Market Value” for the Proposed Sale, Emphasizing the Requirement to Consider Delay... Recent Economic Developments Further Reduce the Likelihood of Obtaining Fair Market Value and Underscore the Option to Delay...</p> <p>In fact, the federal government uses option value in other resource management determinations. Interior’s Bureau of Ocean Energy Management (BOEM) incorporated option value in its offshore oil and gas leasing program for 2017–2022. BOEM stated that:</p>	<p>The prelude to Attachment 8 of the comment states:</p> <p><i>“ In the case of offshore drilling, the governing statute requires the Department of Interior, the administrative agency charged with overseeing the leasing of offshore lands, to consider the economic consequences of its choices, a charge it has implemented through detailed cost-benefit analysis of its planning decisions and through a sophisticated bidding system for lease auctions. But because both the cost-benefit analysis and the bidding system fail to account for real option value, they are fundamentally incomplete, leaving leasing decisions open to litigation risks and failing to maximize the net benefits generated by this public resource.”</i></p>

Number	Commenter	Comment	Response
		<p>(i) environmental and social cost uncertainties can affect the size, timing and location of leasing; (ii) option value can be a component of the “fair market value” of a lease; and (iii) BOEM can raise minimum bids, rents, and royalties for leases to account for option value. BOEM also uses a “hurdle price” analysis to ensure that any areas included in its leasing program are expected to earn positive net economic value.</p> <p>Given the potential for irreversible damage and suboptimal public land uses embedded within BLM’s preferred leasing alternative, BLM should have accounted for the following uncertainties in the EA by exploring a deferred leasing alternative:</p> <ul style="list-style-type: none"> • Current and expected resource prices in the United States and in global energy markets, especially in light of recent record-low oil prices and volatility (described more below); • Environmental conditions and risks from drilling including local pollution, habitat effects, endangered species effects, and greenhouse gas emissions; • Competing uses of the public lands, including recreational activities, preservation, wildlife protection, renewable energy development, cultural and tribal use, and tourism; • Current and expected effects of climate change on the ecosystem, which affect environmental sensitivities; • Information on the cost of drilling in the region and bringing those resources to market; • Safety, pollution-capture, and other drilling technologies; • Energy efficiency, energy conservation, and fuel economy standards that affect fossil fuel demand; and <p>Laws and regulations governing drilling and development on public lands, air pollution, endangered species, and other environmental concerns</p>	<p>The Federal Onshore Oil and Gas Leasing Reform Act of 1987 mandates a national fixed minimum bid. Onshore leasing does not have a flexible leasing system that can “account for real option value” for individual leases.</p>
54.	IPI	<p>In a similar vein, the Forest Service decided, in May 2019, to reject expressions of interest for oil and gas drilling on 52,000 acres in the Humboldt-Toiyabe National Forest in Nevada. The Forest Service’s analysis revealed:</p> <p>. . . unfavorable geologic conditions in the area, meaning that there is little to no potential of oil and gas resources in the area. Additionally, camping, hunting, fishing, and motorized recreation are popular activities in the proposed lease area and represent part of a \$12.5 billion recreation industry in Nevada—an industry that supports 87,000 jobs statewide. The unfavorable geologic conditions, coupled with concerns over potential impacts to wildlife and to the recreational and scenic values of the iconic Nevada landscape, led to the selection of the No Leasing Alternative.</p>	<p>Comment Noted</p>
55.	IPI	<p>Additionally, two cases from the U.S Court of Appeals for the D.C. Circuit hold that consideration of option value is required when assessing “fair market value.” In <i>California v. Watt</i>, the Court remanded an offshore leasing determination because Interior failed to “properly consider[] the economic effect of delaying lease sales,” keying in on the fact that the agency “ignored the price rises in crude oil that make delay a factor increasing the value of any recovered resources.” The Court was even more explicit about the need to consider option value in <i>Center for Sustainable Economy v. Jewell</i>, explaining that an agency may “act[] irrationally in failing to [consider] the informational value of delay,” and highlighting the Department’s “qualitative analysis of the benefits of delaying leasing” as satisfying this standard. As the Court explained, because “[m]ore is learned with the passage of time”— including about drilling costs, safety and environmental risks, and the economics of the oil and gas industry, among others—the “informational value of delay is a relevant cost” that agencies must consider when assessing “fair market value.”</p>	<p>Comment noted. Congress through the MLA and FLPMA determined onshore oil and gas leasing would not be on the “Fair Market Value” but rather a fixed fee schedule. Neither the MLA nor the CFR requires Fair Market Value. Instead it sets fixed fees which is the standard for a minimum bid to \$2 per acre (43 CFR 3120.5-2) and that the winning bid shall be the highest bid exceeding the national minimum acceptable bid (43 CFR 3120.5-1). Congress can amend or rescind the laws. Until such time, the BLM is in compliance with the MLA, FOOGLRA, FLPMA and the CFRs.</p>
56.	IPI	<p>In line with this past agency practice and federal case law, environmental, social, and economic uncertainty support waiting for as much time as possible to develop nonrenewable resources, especially areas that have other wildlife, habitat, watershed protection, carbon sink, recreational, or</p>	<p>This is beyond the scope of the EA. The “areas (BLM) makes available for oil and gas leasing” is determined through the Land Use Planning Process.</p>

<i>Number</i>	<i>Commenter</i>	<i>Comment</i>	<i>Response</i>
		scenic values. BLM should limit the areas it makes available for oil and gas leasing and consider a deferred leasing alternative because there is economic, social, and environmental value in keeping more land protected and off-limits to extraction.	
57.	IPI	While it is clear why oil and gas companies often choose to purchase leases with little prospect of near-term drilling, it is far less clear why BLM facilitates these transactions. After all, the nation derives little monetary benefit from unproductive leases. For one, the government does not receive royalties when a parcel is undeveloped, thereby depriving taxpayers of the primary source of income from onshore leasing. That leaves only lease and rental payments for the land itself, but these are frequently negligible for low-potential lands. The MLA imposes a minimum upfront bid of just \$2 per acre for onshore oil and gas leases—an amount that has not changed since 1987. Additionally, a parcel that does not receive any bids can still be leased noncompetitively, whereby the first qualified applicant is entitled to lease the land upon payment of a \$435 application fee. Rental payments for nonproducing lands are also minimal: A company pays an annual rental fee of only \$1.50 per acre during the first five years of the rental term, and just \$2 per acre for the remainder of the term. For many non-producing parcels, therefore, total revenues are just a few hundred or thousand dollars per year—hardly a fair value for the land’s exclusive use.	Comment noted. Congress is the entity that can amend the Mineral Leasing Act. It is beyond the scope of the EA to analyze the Act.
58.	IPI	In light of these trends, there is no reason to believe that these proposed parcels will be put to productive use or yield significant revenue if sold in this lease sale.	Comment noted. As described in section 1.3 of this EA, if parcel(s) are acquired and a lease(s) issued, the primary lease term is 10 years. During the primary lease term, the lessee is required to pay annual rentals prior to development (43 CFR 3133.1). Once a well is producing, the lessee is then required to pay royalties on oil and natural gas production (43 CFR 3133.2).
59.	IPI	Recent Economic Developments Further Reduce the Likelihood of Obtaining Fair Market Value and Underscore the Option to Delay	Comment noted. Congress through the MLA and FLPMA determined oil and gas leasing would not be on the “Fair Market Value” but rather a fixed fee schedule. Neither the MLA nor the CFR requires Fair Market Value. Instead it sets fixed fees which is the standard for a minimum bid to \$2 per acre (43 CFR 3120.5-2) and that the winning bid shall be the highest bid exceeding the national minimum acceptable bid (43 CFR 3120.5-1). Congress can amend or rescind the laws. Until such time, the BLM is in compliance with the MLA, FLPMA and the CFRs.
60.	IPI	BLM’s Analysis of Economic Impacts Presents an Incomplete and Lopsided Picture That Fails to Give a Hard Look at Key Costs.	See the responses to comments 27 and 28.
61.	Outdoor Alliance	BLM Fails to properly account for Multiple Use Values in this EA, threatening important recreation areas... 21 parcels (008, 014, 018, 022, 038, 039, 045, 048, 051, 052, 053, 055, 058, 072, 075, 082, 084, 112, 116, 133, 134), totaling 35,251 acres, could significantly impact recreation assets, specifically, nationally significant boating opportunities on the Green River, several important rock climbing sites, and numerous mountain biking and hiking trails (see map below).	All referenced parcels except, 008, 014, 018, and 022 have been removed from the September 2020 Lease Sale and will not be included in the NCLS. The commenter has provided no specific rationale for deferring the remaining four parcels Also, the analysis does include a modeled estimate of impacts to the region due to any changes that might occur in regional outdoor recreation spending as a result of activities related to the proposed action.
62.	Outdoor Alliance	BLM fails to analyze several viable alternatives that would protect other multiple uses and reduce environmental and social harms	Refer to BLM response 9.
63.	Outdoor Alliance	Outdoor Alliance is concerned that these proposed leases and subsequent ground disturbing activities will impair recreation assets and experiences, particularly boating on the Green River, and these impacts will in turn negatively affect the City of Green River, which is working hard to develop its recreation amenities and boost its outdoor recreation economy.	Comment noted. All parcels near the Green River have been deferred.
64.	National Wildlife Federation	BLM will not be able to ensure meaningful public participation in oil and gas lease sales. The public cannot be expected to meaningfully participate in the lease sale process at this time and as such, attempts to move forward with oil and gas lease sales disregards the public participation mandate of the Federal Lands Policy Management Act (FLPMA) and the National Environmental Policy Act (NEPA).	A 30-day public comment period was offered for the September EA and unsigned FONSI. The procedures were in align with the NEPA Handbook H-1790-1 section 8.2 and 40 CFR 1506.6(b)). Furthermore, the BLM released a press release to notify the public of the availability to comment. External scoping for EAs is optional (NEPA Handbook H-1790-1 section 6.3.2). The Notice of Competitive Lease Sale (NCLS) will be posted 45 days prior to sale date in compliance with 43 CFR 3120.4-2 on the BLM’s ePlanning, and BLM’s Utah fluid minerals website. A hardcopy of the

Number	Commenter	Comment	Response
		<p>FLPMA requires that BLM give “the public adequate notice and an opportunity to comment upon the formulation of standards and criteria for, and to participate in, the preparation and execution of plans and programs for, and the management of, the public lands.”</p> <p>NEPA requires that “environmental information is available to public officials and citizens before decisions are made and before actions are taken” and reiterates that “public scrutiny is essential to implementing NEPA.”</p> <p>Further, NEPA obligates the BLM to “[m]ake diligent efforts to involve the public in preparing and implementing their NEPA procedures.”</p> <p>BLM public rooms are closed, and state and local orders are encouraging people to stay at home and limiting travel. Notably, Utah ranks 29th for broadband internet access, compounding the challenges with participating in the lease sale process. Broadband internet is particularly problematic in rural areas of the state, exacerbating the challenges of participation in areas most likely to be affected by leasing. Moreover, the Mineral Leasing Act (MLA) requires BLM to give notice of proposed leasing and that “[s]uch notice shall be posted in the appropriate local office of the leasing and land management agencies.”</p> <p>Clearly, BLM cannot currently comply with this requirement and will be in violation of the Act if it moves forward with lease sales. Even if internet or posting notices were not at issue, the public cannot be expected to meaningfully engage in any sort of public process when households across the State are grappling with this pandemic: homeschooling children, facing unemployment, and fighting illness. As the District Court in Idaho recently held in <i>Western Watersheds Project v. Zinke</i>, “the public involvement requirements of FLPMA and NEPA cannot be set aside in the name of expediting oil and gas lease sales.”</p> <p>BLM must suspend lease sales until such a time that it can uphold these public participation requirements at all stages of the lease sale.</p>	<p>NCLS will also be located in the BLM Utah State Office public room. The BLM Utah State Office is the appropriate local office as the management of the leasing program is at the state level and the decision record and FONSI are signed by the Deputy State Director of Lands and Minerals.</p> <p>The EA will be posted online for a 10-day protest period. Refer to section 1.11.</p> <p>Although, the BLM State Office’s public room is closed, the BLM specialists are still available to be reached via email and phone calls and can help the public with their questions. The public is also able to go to the nearest local BLM Field Office, call on the phone to any BLM Office where the BLM specialists can help individuals locate the information they are seeking or refer them to the appropriate place.</p> <p>The BLM posts all NEPA documents on the BLM ePlanning site. A hardcopy is not placed in the public rooms.</p>
65.	National Wildlife Federation	Leasing at this time is not financially responsible	<p>This is outside the scope of the EA. It is the mandate of the BLM, as derived from various laws, including the Mineral Leasing Act (MLA) and the Federal Land Policy and Management Act of 1976 (FLPMA), as amended, to support the exploration and development of oil and gas owned by the Federal Government. The MLA establishes that deposits of oil and gas owned by the United States are subject to disposition in the form and manner provided by the MLA under the rules and regulations prescribed by the Secretary of the Interior, where consistent with FLPMA and other applicable laws, regulations, and policies. Additionally, the Federal Onshore Oil and Gas Leasing Reform Act of 1987 (FOOGLA) states that lease sales shall be held for each State where eligible lands are available at least quarterly and more frequently if the Secretary of the Interior determines such sales are necessary. Eligible lands are those that are open for leasing, and which the BLM has received Expressions of Interest (EOIs) nominating lands to be offered for lease or which the BLM has identified as high priority for leasing to prevent drainage. For the September 2020 Lease Sale, all parcels were nominated by the public.</p> <p>Refer to BLM comment response 59.</p>
66.	National Wildlife Federation	<p>As held in <i>WildEarth Guardians v. Zinke</i>, although BLM need not analyze “site specific impacts” at the lease sale stage, it is not discharged from its obligation to analyze “reasonably foreseeable environmental impacts.” As the court made clear, “while BLM could not, at the leasing stage, reasonably foresee the environmental impacts of specific drilling projects, it could reasonably foresee and forecast the impacts of oil and gas drilling across the leased parcels as a whole. ‘In determining what effects are ‘reasonably foreseeable,’ an agency must engage in ‘reasonable forecasting and speculation.’” Such reasonable forecasting and speculation must include an analysis of impacts to wildlife, viewsheds, recreation, and wilderness areas. By the time BLM performs APD-specific environmental analysis, the inquiry is necessarily focused on <i>how</i> wells are drilled, not <i>whether</i> drilling them makes sense in the first place. The latter question can only be</p>	<p>The EA is in compliance with the WEG vs Bernhardt ruling. The WEG vs. Bernhardt ruling was related only to Greenhouse Gases (GHG). Refer to sections 3.3.1 and 3.3.2 for the GHG analysis and discussions. The BLM prepared an issue-based EA in accordance with the NEPA Handbook H-1790-1, sections 6.4 and 6.4.1. CEQ regulations require NEPA documents to concentrate on the issues that are truly significant to the action in question, rather than amassing needless details (40 CFR 1500.1(b)).</p>

Number	Commenter	Comment	Response
		answered at the lease sale stage. Instead of simply noting that BLM cannot predict the level and intensity of leasing, the agency should instead analyze scenarios representing low, medium, and high levels of potential development and the impact these scenarios will have on resource values.	
67.	National Wildlife Federation	BLM cannot avoid its obligation to conduct an appropriate environmental analysis by pointing to the underlying resource management plan (RMP) and to the Moab master leasing plan (MLP). The MLP and RMP-level analysis did not assess of a variety of impacts relevant to BLM's decision whether to offer particular parcels for leasing or whether additional stipulations should be required. These include, for example, the depth and quality of groundwater in specific locations, particular wetlands or riparian areas, information about topography, soil conditions and vegetation with a level of specificity that would allow BLM to prevent erosion or soil damage at the site-specific level, and the presence or absence of special status wildlife species in particular locations.	Comment noted. All parcels within the MLP have been deferred.
68.	National Wildlife Federation	Furthermore, the RMPs necessarily included only a high-level analysis of leasing impacts that identified the category of impact and what stipulations or legal requirements may apply. Such a generic discussion of types of impacts fails to provide many facts necessary for BLM to make an informed decision about leasing individual parcels. For example, the RMPs fail to assess whether and to what extent stipulations will actually be effective in protecting resources on particular parcels, which resources on each parcel will suffer particular damage if an accident occurs, or where additional protective measures may be warranted on particular parcels. Most of the RMPs' discussion of impacts, in fact, could apply to any lease sale and therefore lack sufficient analysis as it relates to this lease sale. This does not satisfy NEPA. Merely describing the "the category of impacts anticipated from oil and gas development" isn't sufficient when it is reasonable for BLM to do more.	<p>The BLM prepared an issue-based EA in accordance with the NEPA Handbook H-1790-1, sections 6.4 and 6.4.1. CEQ regulations require NEPA documents to concentrate on the issues that are truly significant to the action in question, rather than amassing needless details (40 CFR 1500.1(b)).</p> <p>Issues not included in further detail have been determined that additional analyses is not required. These issues have either been previously analyzed within a FEIS and/or a EA or have Required Design Constraints/Mitigation of Impacts that are implemented by law, regulation, or previous decisions (i.e., RMP ROD, EA decision, or EIS decision). refer to section 1.6, 1.7 and Appendix E for a complete list of applicable regulations, policies, or RMPs. Impacts to the resource have also been reduced through design features, best management practices, mitigation requirements, stipulations, and lease notices.</p> <p>The commenter contends that the BLM must "do more and that this EA doesn't satisfy NEPA." EISs were prepared for the RMPs listed in section 1.6 that analyzed most of the impacts of oil and gas development within the respective field offices. The RMPs determined which lands in the field offices would be open to oil and gas leasing and with what stipulations.</p>
69.	National Wildlife Federation	BLM must analyze the impacts of the lease sale on big-game: parcels in this lease sale contain important big game habitat, including crucial winter habitat for elk, mule deer, and pronghorn. BLM must analyze the impacts of oil and gas development on these habitats. A number of studies point to the impacts of oil and gas development on big-game. For example, a 2017 study by Hall Sawyer documented a 36% decline in mule deer abundance during an oil and natural gas development project despite aggressive onsite mitigation efforts that included directional drilling and liquids gathering systems. The study shows that impacts of oil and gas development "can be long term, if not permanent, and mitigation measures should be accordingly long term." BLM has failed to analyze the impacts. Instead, the EA states "[a]ll general wildlife resources, including crucial, substantial and year-round habitat, fawning, lambing and calving areas for big game, and potential impacts to these habitats from oil and gas development are addressed in the 2008 RMP and the 2016 MLP." As we discuss above, this analysis is not sufficient. For example, the MLP simply states "[t]he BLM's management of wildlife habitat has had, and will continue to have, an impact on both local communities and those that exist outside the Colorado Plateau." Nothing in the MLP discusses the impacts of oil and gas development on big-game. Elsewhere, the EA simply notes stipulations that will be applied to parcels in important habitat. Identification of stipulations does not amount to a "hard look" as required by NEPA.	Comment noted. All parcels within the MLP have been deferred.
70.	National Wildlife Federation	BLM must analyze the impacts the lease sale to wilderness and wilderness study areas (WSA). A number of parcels in this lease sale are near the Labyrinth Canyon Wilderness Area, and others are near wilderness study. In the EA BLM states "BMPs from the Moab MLP to address noise and night skies (page 5 of Appendix B to the Moab MLP EIS) would mitigate impacts to the wilderness area." Simply stating that BMPs will be applied to address noise and night skies does not amount to a "hard look" as mandated by NEPA.	Comment noted. All parcels within the vicinity of Labyrinth Canyon and any WSAs have been deferred.

Number	Commenter	Comment	Response
71.	National Wildlife Federation	BLM must analyze the impacts of the lease sale on visual resources. Proposed leases are within 0.4 miles of Canyonlands National Park, 4 miles of Arches National Park, 3 miles of Capitol Reef National Park, and 0.7 miles of the original boundaries of Bears Ears National Monument. Oil and gas development will degrade the quality of the night sky, throughout these National Parks and the Monument. BLM must analyze these impacts BLM must analyze the impacts of the lease sale on recreation values. A number of the proposed leases are in areas highly valued by recreationalists. Oil and gas development could seriously impact recreation in the area, from disturbing the actual land, to creating noise disturbances, degrading air quality and the night sky, and impinging on opportunities for solitude. Recreation is also incredibly important to the local economy of the area.	Comment noted. All parcels near the parks and monuments have been deferred.
72.	National Wildlife Federation	BLM must analyze the extent of past oil and gas leasing in the area, how this past leasing may have contributed to significant environmental impacts, and whether additional leasing may have an “additive and significant relationship to those effects.” Since December 2017 through its upcoming September lease sale, the BLM has offered oil and gas leasing and development in approximately 886 lease parcels, totaling over 1 million acres of public lands in Utah. This large scale leasing must be taken into account in a cumulative impact analysis.	EISs were prepared for the RMPs listed in section 1.6 and the RFDs for the RMPs, analyzed oil and gas leasing and development within the respective field offices. The RMPs determined which lands in the field offices would be open to oil and gas leasing, and whether or not those open lands would be leased and with what stipulations. The EA in section 3.3.2 analysis the direct, indirect, and cumulative impact of leasing which includes the past lease sales.
73.	National Wildlife Federation	BLM should withdraw or defer the following parcels in order to protect valuable wilderness, wildlife and recreation resources 069, 070, 071, 075, 112, 117, 120, 121, and 136,	Comment noted. The listed parcels have been deferred.
74.	National Audubon Society	Given the importance of protecting other multiple uses, BLM should not lease in areas that have more value for recreation, wilderness characteristics and wildlife habitat. In addition, thoroughly evaluating the benefits of protection would be consistent with BLM’s obligations under the National Environmental Policy Act to thoroughly evaluate the direct, indirect and cumulative impacts of leasing and consider more environmentally protective alternatives. <i>See</i> , 40 C.F.R. § 1508.58; 42 U.S.C. § 4332(2)(E).	The commenter contends that the BLM must “analyze all direct, indirect and cumulative impacts of its leasing decision,” which was done at in the FEIS RMPs. BLM Handbook H – 1624-1 <i>Planning for Fluid Mineral Resources</i> reflects that premise. EISs were prepared for the RMPs listed in section 1.6 that analyzed most of the impacts of oil and gas development within the respective field offices. The RMPs determined which lands in the field offices would be open to oil and gas leasing, and whether or not those open lands would be leased and with what stipulations. This is beyond the scope of commenting that the BLM should not lease in areas and protect recreation, wilderness characteristics and wildlife habitat. Decisions on what lands would be made available to lease were made in the RMPs listed in section 1.6.
75.	National Audubon Society	BLM will not receive a fair return for taxpayers on leasing	This is outside the scope of the EA.
76.	National Audubon Society	Meaningful public participation in lease sales is not currently possible.	A 30-day public comment period was offered for the September EA. The procedures were in alignment with the NEPA Handbook H-1790-1 section 8.2 and 40 CFR 1506.6(b)).
77.	National Audubon Society	BLM cannot offer parcels in sage-grouse habitat	The lease parcels identified within the Moab, Richfield, Price, Vernal and Fillmore Field Office Resource Management Areas are located outside designated Greater Sage-grouse Priority and General Habitat Management Areas (PHMA & GHMA) and do not pose a threat to this species.. Please refer to Appendix D.
78.	National Audubon Society	IM 2018-034 is invalid.	This is outside the scope of the EA.
79.	Nyika Campbell, Jordyn Chappell, Julie Christie Alan Goss, Andrew Herder, Katie, Dustin Kempter, Garrett Krage, Anna McAuliffe, Kelsey McNamara, Jacob	Any decisions involving the use of this land should be made with the input of the Southern Ute Indian Tribal Council as well as the tribal governments of the Dine’ (Navajo), Paiute, Goshute, and Shoshonea. Please respect the requests of Tribal governments, Utah citizens and those who recreate on the land and end the auction process of these parcels.	In respect to the September 2020 nominated parcels, the BLM invited the following Native American tribes to participate in Government to Government consultations via a certified letter sent April 3, 2020: All Pueblo Council of Governors, Battle Mountain Band Te-Moak Tribe of Western Shoshone, Colorado River Indian Tribes, Confederated Tribes of the Goshute, Eastern Shoshone, Elko Band Council Te-Moak Tribe of Western Shoshone, The Hopi Tribe, Jicarilla Apache Nation, Kaibab Band of Paiute Indians, Moapa Band of Paiute Indians, The Navajo Nation, Northwestern Band of Shoshone, Paiute Indian Tribe of Utah, Pueblo of Acoma, Pueblo of Cochiti, Pueblo of Isleta, Pueblo of Jemez, Pueblo of Kewa (Santo Domingo), Pueblo of Laguna, Pueblo of Nambe, Pueblo of Ohkay Owingeh, Pueblo of Picuris, Pueblo of Pojoaque, Pueblo of San Felipe, Pueblo of San Ildefonso, Pueblo of Sandia, Pueblo of Santa Ana, Pueblo of Santa Clara, Pueblo of Taos,

Number	Commenter	Comment	Response
	Payne, Chloe Wirum, and W. Woodley		<p>Pueblo of Tesuque, Pueblo of Ysleta del Sur, Pueblo of Zia, Pueblo of Zuni, San Juan Southern Paiute, Shoshone-Bannock, Skull Valley Band of Goshute Indians, Southern Ute Tribe, Southfork Band Council Te-Moak Tribe of Western Shoshone, Te-Moak Tribe of Western Shoshone, Ute Indian Tribe, Ute Mountain Ute Tribe, Wells Band Council Te-Moak Tribe of Western Shoshone, White Mesa Ute, and Zia Pueblo. Refer to section 4.2.1.</p> <p>Of the tribes invited to participate, the BLM received responses from the Paiute Indian Tribe of Utah, Ysleta del Sur Pueblo, and the Hopi Tribe.</p>
80.	Amanda Podmore	<p>045 - This is a tiny parcel In Wild & Scenic zone directly next to the Green River. It has NSO/CSU stipulations but doesn't appear to have other current leases near it so it begs the question of how and why it would be developed.</p> <p>048 - in Wild & Scenic Rivers zone, directly overlooking Bowknot Bend ACEC in Price Field Office.</p> <p>055, 056, 117, 118 and 120 have NSO for cultural resources. Defer pending additional cultural resource survey.</p> <p>Parcels 076, 078, 079, 080, and 097 should have Lease Notice 163 – Notification of the National Park Service</p> <p>111- This parcel was not in the shapefile nor could I identify it on the Moab maps provided by the BLM. Please defer as the public has not had adequate information to comment on this parcel.</p> <p>Parcels 133 and 134 Next to the Dry Lake Archaeological District ACEC of the Price Field Office but does not have adequate cultural resource protection stipulations. Defer pending further cultural resource study and appropriate stipulations</p> <p>Parcel 135 has not cultural resource stipulations</p> <p>136 - Defer for protection of integrity of cultural resources and Old Spanish Trail. This parcel has a lease notice for high likelihood of cultural resources but is lacking other cultural resource Lease Notices</p>	Comments noted. All referenced parcels have been deferred.
81.	Amanda Podmore	Failure to analyze the potential impacts of hydraulic fracturing	<p>The occurrence of hydraulic fracturing is explained in the summary below.</p> <p>Refer to Appendix D. If the parcels are developed, wells within the parcels may be completed using hydraulic fracturing techniques. Additional information is provided in Appendix G. “FracFocus,” is a database available to the public online at http://fracfocus.org/. Public has expressed concerns that:</p> <ul style="list-style-type: none"> • Spills during the management of hydraulic fracturing fluids and chemicals or produced water that result in large volumes or high concentrations of chemicals reaching groundwater resources; • Injection of hydraulic fracturing fluids into wells with inadequate mechanical integrity, allowing gases or liquids to move to groundwater resources; and, • Discharge of inadequately treated hydraulic fracturing wastewater to surface water resources. <p>Before operators or service companies perform hydraulic fracturing treatment, a series of tests are performed to ensure well, casing, and well equipment are in proper order and will safely withstand the application of the fracture treatment pressures and flow rates. Operators must comply with O.O. #2 and O.O. # 7. If fracking should occur in an area where there is no vertical separation between the hydraulically fractured rock formation and the bottom of the potential underground drinking water source, fracking fluid may be introduced into the source. The potential impacts to groundwater resources in particular drinking water resources has been extensively studied by the EPA (EPA,2016). The amount of vertical and horizontal distances from fracturing activities to groundwater sources is determined at the APD stage. BMP’s, plugging and casing requirements shall be required to prevent flow back. In instances where no safe vertical or horizontal separation</p>

Number	Commenter	Comment	Response
			<p>distances from fracturing and groundwater sources cannot be safely determined, fracturing activity will not be permitted and the APD denied.</p> <p>The majority of flow back water from hydraulic fracturing in Utah is recycled and used in future hydraulic fracturing completions. Therefore, the underground injection of hydraulic fracturing flow back in Utah is very limited and presents little potential for inducing seismic activity. In fact, there has been no reported induced seismicity in Utah that was from water injected into Class II wells. Oil and gas wells produce a great amount of wastewater. The majority this water has high salt brine content and must be disposed of in an environmentally safe manner. In Utah, a majority (95%) of this produced water is pumped into Class II injection wells. In certain parts of the country, water injection has caused some induced seismicity in the form of small earthquakes. Two major factors play a role in induced seismicity from water injection. First, the amount of water being injected. Secondly, the local geology of the water injection site. In Utah, the volumes are lower than those states experiencing induced seismicity. Also, the geology is different than those states experiencing induced seismicity. The injection zones are stratigraphically thousands of feet above the basement rock that may contain large unknown faults. Therefore, at this time it appears that induced seismicity from water injection is not a problem in the oil fields of Utah. (Personal communication from John Rogers, Utah Division of Oil, Gas and Mining (UDOGM), March 27, 2018).</p>
82.	Amanda Podmore	Climate Change exacerbated by Venting and Flaring	Methane emissions from developing the parcels was considered in the GHG section and the resulting climate impacts from GHG emissions are also listed. Refer to section 3.3.2. Wells developed on the offered parcels must comply with Utah Administrative Code R307-511 that requires associated gas be routed to a sales pipeline, to a process unit for combustion, or an operating VOC control device. Compliance with this rule would reduce the climate impacts associated with venting and flaring as less methane will be emitted into the atmosphere.
83.	Amanda Podmore	<p>Failure at reasonable and good faith identification of cultural resources</p> <p>The National Historic Preservation Act regulations at 36 C.F.R. § 800.4(b) outline the BLM's requirements to "make a reasonable and good faith effort" to identify cultural resources. With this level of density and the known breadth of cultural heritage sites in the area, it is evident that the cultural resource concentration encompassing the September 2020 lease sale parcels merits further Class III intensive cultural resource survey. This was made clear in the Federal Register regarding the legal authority of Section 106 in stating, "[i]t is simply impossible for an agency to take into account the effects of its undertaking on historic properties if it does not even know what those historic properties are in the first place." 65 Fed. Reg. 77,698, 77,715 (Dec. 12, 2000). This is all the more important since the BLM claims it cannot generally deny disturbance on the land with an NSO stipulation. But even the NSO stipulations in the lease sale are shot through with exceptions and waivers, making them nonbinding and weak. I also find Stipulation UT-S-361 to be problematic in allowing modification and exception.</p>	<p>The BLM has conducted a reasonable and good faith effort to identify historic properties. As part of the agencies efforts to comply with Section 106 of the NHPA the BLM examined existing known information about cultural resources within the parcels and solicited additional information from consulting parties and tribes. This approach used in this sale complies with Appendix E of the State Protocol Agreement between the Bureau of Land Management and the Utah State Historic Preservation Office, executed on January 2, 2020. Furthermore, conducting extensive Class III surveys of proposed parcels associated with industry expressions of interests for quarterly sales is not reasonable given the large areas of land, the uncertainty that any development will occur on parcels that do sell, and the time and cost which would be associated with such an endeavor over such a short period of time.</p> <p>At the time of leasing the BLM cannot predict where or if development will occur on parcels. Therefore, the agency implements a "phased approach" to Section 106, as provided for in 36 CRF 800.4(b)(2), which states, "where alternatives under consideration consist of corridors or large land areas, or where access to properties is restricted, the agency official may use a phased process to conduct identification and evaluation efforts."</p> <p>This phased approach was determined appropriate for Section 106 compliance by IBLA as part of the Mandan, Hidatsa, and Arikara Nations appeal in 2005 (IBLA 2005-47). IBLA 2005-47 states that an examination and comprehensive analysis of existing cultural resource records, previous tribal consultation, ethnographic data, and archeological and historic literature specific to the area under review constitutes a meaningful evaluation under the Section 106</p>

Number	Commenter	Comment	Response
			<p>process. Such an analysis can lead to application of NHPA protective stipulations for sensitive cultural resources. Additional cultural resource surveys and compliance under Section 106 may be taken at the APD stage when the area of ground disturbance is known as part of a phased approach permitted under 36 CFR 800.4(b)(2) and 36 CFR 8006 (a)(3).</p> <p>A phased approach has also been supported by the Advisory Council on Historic Preservation for past lease sales (See <i>Review of “no adverse effect” finding Bureau of Land Management Oil and Gas Lease Sale for December 2019 San Juan County, Utah</i> Letter from ACHP dated November 21, 2019).</p> <p>Additionally, the Cultural Resources Protection Stipulation which is attached to all parcels also states that, “BLM will not approve any ground-disturbing activities that may affect any such properties [historic properties] or resources until it completes its obligations under applicable requirements of NHPA and other authorities. The BLM may require modification to exploration or development proposals to protect such properties, or disapprove any activities that is likely to result in adverse effects which cannot be successfully avoided, minimized, or mitigated.”</p> <p>Therefore, the analysis that the BLM completed for this undertaking is legally sufficient as it complies with law, policy, regulation, and guidance associated with Phased Undertakings, as demonstrated above.</p>
84.	Amanda Podmore	Most of the parcels have two Lease Notices attached: UT-LN-137: Cultural Resources I and UT-LN-138: Cultural Resources II. The following exceptions show discrepancies that may lead to adverse effects on cultural resources through lessened requirements of future operators and the BLM. These exceptions were not explained in the EA.	Comment noted. All parcels referenced have been deferred.
85.	Amanda Podmore	Of great concern to me are the sensitive and unique rock story panels (rock art), particularly in the southern reaches of the lease sale within proposed parcels. As mentioned above, NSO cannot truly protect these one-of-a-kind sites. What’s more, increased travel, traffic, road access, and dust in the area could degrade them. Several of the proposed lease sale parcels contain one-of-a-kind Barrier Canyon style rock art, or rock stories. The sale also includes what is likely the only known handprint sites in the Field Office. Additionally, there is much research potential at sites like the Barrier Canyon pictographs and there is a great need for ethnographic study, including in-person visits by consulting Tribes.	<p>Any proposed development on a leased parcel will be subject to the provisions of Section 106 of the NHPA and tribal consultation authorities. BLM will accommodate tribal requests for on-site consultation. Each parcel is subject to the mandatory stipulation for the statutory protection of cultural resources (Handbook H-3120-1).</p> <p>As with any proposed development the BLM will consider any potential impacts to cultural resources when development is proposed, taking into account the sensitivity of each cultural resource type.</p> <p>The operation, maintenance, and use of dirt and gravel surfaced routes associated with oil and gas development on BLM lands may result in the generation of fine dust particles in airborne clouds. The impact of dust particles settling on rock art panels has been the subject of three rigorous scientific studies conducted in Nine Mile Canyon, Utah. These studies evaluated if the movement and settlement of dust on nearby rock art panels increased the weathering of rock art sites, which would constitute an adverse effect to eligible rock art sites. The 2008 study noted that abrasion damage to rock art on sandstone surfaces only occurs under very specific conditions. In particular the dust must be comprised of a grit that is harder than the sandstone itself if roads are constructed from local materials, it is unlikely that the grit will be harder than the surrounding rock. It is possible, depending on local circumstances that dust may impact the visibility of rock art panels, which could rise to the level of an adverse effect if the presence of large dust clouds generated is a frequent and regular occurrence. The potential for these impacts will be further examined at the APD stage.</p>

Number	Commenter	Comment	Response
86.	Kristen Yannonne	<p>The EA is defective for selectively looking at impacts from development following leasing. Leasing is not “an administrative action that does not directly cause environmental consequences” (1.2) as the BLM acknowledges in the next sentence which provides: “It is also considered to be an irretrievable commitment of resources...”. Courts have stated that the act of leasing cannot be disassociated from environmental impacts that result from actions that may happen because of the lease. BLM’s very action of preparing an EA undermines the argument that leasing does not result in environmental impacts. Indeed, the EA establishes the need to analyze impacts but only in the four “issues” brought forward for analysis. The following language is in the Air Resources Section at 3.3.2.2:</p> <p style="padding-left: 40px;">While the leasing action itself would not generate any GHG emissions, the BLM recognizes that the reasonably foreseeable consequence of leasing may lead to oil and gas development, and that such development could result in an increase in GHG emissions due to well development and operations, and from downstream uses of the petroleum products produced from these parcels.</p> <p>However, the EA is silent on impacts to a number of other resources, confusingly denying that leasing alone does not cause impacts. This is particularly true in Table 2, discussed in more detail below, where the BLM acknowledges that resources are present in the areas being offered for lease but still fail to analyze impacts.</p>	<p>The BLM prepared an issue-based EA in accordance with the NEPA Handbook H-1790-1, sections 6.4 and 6.4.1. CEQ regulations require NEPA documents to concentrate on the issues that are truly significant to the action in question, rather than amassing needless details (40 CFR 1500.1(b)).</p> <p>Issues not included in further detail have been determined that additional analyses is not required. These issues have either been previously analyzed within a FEIS and/or EA or have Required Design Constraints/Mitigation of Impacts that are implemented by law, regulation, or previous decisions (i.e., RMP ROD, EA decision, or EIS decision). refer to section 1.6, 1.7 and Appendix E for a complete list of applicable regulations, policies, or RMPs. Impacts to the resource have also been reduced through design features, best management practices, mitigation requirements, stipulations, and lease notices.</p> <p>The commenter contends that the BLM must “analyze all direct, indirect and cumulative impacts of its leasing decision.” It bases this contention on the principle that lease issuance is an “irretrievable commitment of resources” thus an Environmental Impact Statement (EIS) is required when proposing to make lands available to lease without a No Surface Occupancy (NSO) Stipulation. EISs were prepared for the RMPs listed in section 1.6 that analyzed most of the impacts of oil and gas development within the respective field offices. The RMPs determined which lands in the field offices would be open to oil and gas leasing, and whether or not those open lands would be leased with what stipulations.</p>
87.	Kristen Yannonne	The EA does not acknowledge that part of the obligation a lessee assumes is the obligation to maximize production under the lease (Mineral Leasing Act).	The EA is very clear that a certain level of development may take place either on the surface of a lease, or on adjacent lands to access the leased minerals.
88.	Kristen Yannonne	<p>In both the EA and the Rationale Table Appendix D, the BLM’s position that leasing has no environmental impacts, notwithstanding court rulings to the contrary and other statements in the EA, is quite clear. See, for example, the discussion under Environmental Justice which states that leasing does not cause any EJ issues (at pages 293) although development of those leases might raise EJ concerns. This conflict is contained in the main body of the EA, discussed below....</p> <p>BLM’s IDT review clearly states that analysis of environmental justice will be required if development occurs... BLM’s IDT review clearly states that analysis of environmental justice will be required if development occurs. This is true of other resources as well. The EA’s failure to analyze impacts to all resources if development is arbitrary and capricious and not in compliance with NEPA.</p>	See the response to comment 86. If an APD is received, the BLM would conduct additional site-specific NEPA analysis and consider the lease notices before deciding whether to approve the APD, and what conditions of approval (COA) should apply.
89.	Kristen Yannonne	The EA asserts that no analysis is possible until an APD supplies the needed specific location. There may be limited resources for which that is true but certainly not for all resources and the EA analyzes impacts from development in depth for a few selected resources.	The EA asserts that <i>site specific</i> analysis is not reasonable nor required at the leasing stage. This is true for all resources. <i>Reasonably foreseeable</i> analysis is conducted if deemed necessary.
90.	Kristen Yannonne	The EA relies on the Rationale for Determination in not addressing resources that are found in the proposed parcels. Just reviewing a few of the rationales shows that while some may be appropriate, others are insufficient. The burden is on the BLM to justify not analyzing impacts to resources that the stipulations and lease notices show to be present.	Comment noted. Refer to BLM comment response 120.
91.	Kristen Yannonne	At least one of these stipulations/lease notices (UT-LN-140) is not listed in the table of stipulations and notices, at least not in sequential order	Comment noted. We have made the change in Appendix B.
92.	Kristen Yannonne	The “Light Pollution”, stipulation is so non-binding as to be ineffective as are UT-LN-162HIGHLY VALUED SETTINGS AND SCENIC LANDSCAPES, LT-LN-163 NOTIFICATION OF THE NATIONAL PARK SERVICE, UT-LN-164 NOISE IN AREAS ADJACENT TO NATIONAL PARKS	Comment noted. All parcels to which these <i>lease notices</i> were attached have been deferred.
93.	Kristen Yannonne	Even though the EA does not analyze all of the resources that are likely present in the area (the statement of issues in Table 2 is very limited in scope), the extensive list of stipulations and lease	<p>This is a misunderstanding of the derivation and purpose of stipulations.</p> <p>A stipulation included in an oil and gas lease shall be subject to modification or waiver only if the authorized officer determines that the factors leading to its inclusion in the lease have changed</p>

Number	Commenter	Comment	Response
		<p>notices provide information about the types of resources that are located on the parcels, even though the EA does not analyze them.</p> <p>The stipulations make clear that the EA's analysis is inadequate from two separate perspectives. The first is that the EA could have (but did not in any meaningful way) argued that the stipulations and lease notices are adequate protections for those resources so that no analysis was needed.</p>	<p>sufficiently to make the protection provided by the stipulation no longer justified or if proposed operations would not cause unacceptable impacts. If the authorized officer has determined that modification or waiver of a lease term or stipulation after a lease is issued, the modification or waiver shall be subject to a 30-day public comment review (43 CFR 3101.1-4). The BLM is in compliance with its regulations, policy, and LUPs for stipulations that have modifications and/or waiver criteria.</p>
94.	Kristen Yannone	<p>All of the stipulations have exception criteria that allows development regardless of the stipulations. In the case of ephemeral streams, the exception states:</p> <p>The Authorized Officer may grant an exception if: a) there are no practical alternatives; b) impacts could be fully mitigated; and c) proposed operations would not result in unacceptable impacts. So, the very wording of the stipulations proves that it does not prevent environmental impacts that the Authorized Officer finds "acceptable".</p>	<p>A stipulation included in an oil and gas lease shall be subject to modification or waiver only if the authorized officer determines that the factors leading to its inclusion in the lease have changed sufficiently to make the protection provided by the stipulation no longer justified or if proposed operations would not cause unacceptable impacts. If the authorized officer has determined that modification or waiver of a lease term or stipulation after a lease is issued, the modification or waiver shall be subject to a 30-day public comment review (43 CFR 3101.1-4). The BLM is in compliance with its regulations, policy, and LUPs for stipulations that have modifications and/or waiver criteria.</p>
95.	Kristen Yannone	<p>Stipulations have other limitations, such as timing limitations which prevent disturbances to habitat during birthing or some other special season but do not preclude development and thus habitat fragmentation and disturbance if built at other times. Crucial winter range protections will not preclude elk habitat becoming unsuitable if crisscrossed by roads, pipelines, and well pads</p>	<p>This is beyond the scope of the analysis. The time to address such concerns over fragmentation of habitat is at the land use planning stage. Timing stipulations address another concern.</p>
96.	Kristen Yannone	<p>Table 3 purports to explain why selected resources were not analyzed. The following is a brief analysis of errors in this rationale showing that the resources should have been analyzed in the EA.</p> <p>1., 2, 3 and 8 Leasing is an irretrievable commitment of resources</p> <p>4. A properly analyzed EA would allow BLM to apply site specific stipulations</p> <p>5. The EA's reliance on some parcels being closed to leasing or subject to NSO (is not?) determinate of whether analysis of these parcels is required.</p> <p>6. The EA muddles a variety of resources in the Recreation cell</p> <p>7. The EA indicates that development could be denied only if the parcel has an NSO stipulation</p>	<p>1,2, 3 and 8 .See the response to Appendix H Comment 1.</p> <p>4. BLM conducts a site specific review of parcels, and attaches the appropriate stipulations from the RMP and Lease Notices from various sources</p> <p>5. There are no parcels in areas closed to leasing. Parcels that are NSO are not as irretrievable commitment of resources</p> <p>6. Resources are not "muddled." Stipulations derived in one program have protective effects on resources in other resources.</p> <p>The commenter does not provide the page number for the statement given that interpretation. Without that context, we cannot adequately respond. See the response to Appendix H Comment 1.</p>
97.	Kristen Yannone	<p>Reasonably Foreseeable Development (Table 4 and related discussion): The BLM cites a GAO analysis of 47,925 federal onshore oil and gas leases issued from 1987 through 1996 to justify that "some parcels may be assumed to have one or more wells drilled, while the remaining parcels may be assumed to have fewer than one well per parcel drilled." The BLM does not show the relevance of these data to what is likely to happen on the parcels proposed for leasing in this sale. The BLM clearly has the data that would show what the percentage of parcels nearby have been drilled in a more recent era that includes the type of highly sophisticated drilling techniques that are now available.</p>	<p>This was footnote 12 to section 2.2. The BLM summarized the GAO report in footnote 12. This is the most recent GAO report that the public may want to read. However, the BLM cited to the RFDs, and UDOGM statistical information on APDs submitted for section 2.2. The BLM cites to the best available reports and data it has.</p>
98.	Kristen Yannone	<p>The EA discloses by field office what percentage of approved APDs were drilled in 2016 to 2019 at pages 19-20, but the EA does not explain why these data are relevant to what may happen to the proposed lease parcels being analyzed here.</p>	<p>See footnote 14: Parcels 136, and 135 were previously leased. Acreages within parcel 135 were previously held by one lease UTU087191 (2009-2019), and acreages within parcel 136 were previously held by lease UTU087185 (2009-2019). No development occurred during the 10-year primary lease term for any of these leases. The BLM has clarified the section. The parcels located in the Moab Field Office are considered to be low to moderate potential often with the lessees not developing the leases during the primary 10-year term.</p>
99.	Kristen Yannone	<p>The EA's assumptions for analysis are a jumble of confusing and unclear information that render them insufficient under NEPA. Given the lack of usable data, since this EA is to determine if significant impacts could occur necessitating analysis in an environmental impact statement, the BLM should assume that all parcels would developed to the fullest extent possible in keeping with</p>	<p>Such an analysis is beyond the rule of reason at the leasing stage. If, at the development stage, the level of development may cause impacts that exceed the reasonably foreseeable impacts of the EIS</p>

Number	Commenter	Comment	Response
		other limitations such as well spacing and limitations on steepness of slope or unsuitable soils. This additional analysis would require nothing more than a minor GIS analysis of the parcels, something that the BLM presumably did in preparing the EA.	prepared for the land use plan and the leasing EA, and those impacts are potentially significant, there is nothing that precludes the agency from preparing an EIS at that time.
100.	Kristen Yannone	It is unclear what purpose is served by providing the number of “active” leases in each field office. The EA is replete with detailed but useless data like this. The EA fails to type this information to cumulative impacts or other required analysis.	Comment noted
101.	Kristen Yannone	3.3.1 Issue 1 Air Emissions The entire analysis is based upon assumptions regarding future development that the EA does not adequately support; see above. It is likely that the BLM has accurately calculated emissions based on those assumptions, there is no analysis benefit from the calculations because it is likely that the assumptions are incorrect and could understate development.	See the response to comment 99.
102.	Kristen Yannone	3.3.1.4 Cumulative Impacts The EA doesn’t offer any justification for its determination of the CIAA for air quality much less explain its position that one CIAA is appropriate for all of the various questions lumped under air quality including emissions, ozone, anti-degradation requirements, etc. The EA chooses not to list all cumulative impacts as being “too numerous” while acknowledging that these unanalyzed impacts can “reduce air quality through emissions of criteria pollutants (including fugitive dust), VOCs, and HAPs as well as contribute to deposition impacts and a reduction in visibility.”	See the responses to comments 1 and 2.
103.	Kristen Yannone	Cost of Carbon The EA does not explain why it doesn’t quantify monetary costs of carbon although a number of tools exist to do so. Moreover, the EA wrongly interprets recent court cases mandating an analysis of social costs when the EA states at page 41: Quantifying only the costs of oil and gas development, by using the social cost of carbon metrics, but not the benefits (as measured by the economic value of the proposed oil and gas development and production generally equaling the price of oil and gas minus the cost of producing, processing, and transporting the minerals), would yield information that is inaccurate and not useful for the decision-maker. The court decisions have been that stating the economic benefits of development and not the costs is incorrect; the EA reverses this approach. The EA further ignores recent decisions by stating that it meets the obligation to analyze social costs by disclosing emissions. The decisions that required analysis of social costs did disclose emissions and the court decided that this approach was inadequate. Nor is it persuasive for the federal government to refuse to address a problem because it is “confusing” or uncertain ⁵ . By providing no calculation of any kind, the EA attributes no economic cost to carbon. As the courts have ruled, there may be a number of analytical tools and approaches but none of them would calculate the social cost to the carbon as zero	See the response to comment 27.
104.	Kristen Yannone	Socio-Economic Impacts	See the response to comment 28.
105.	Kristen Yannone	Deferring the parcels may result in higher lease bids and other economic benefits. The EA generally describes the economic benefits associated both with leasing and subsequent development. The EA fails to consider deferring the leasing of parcels to a later time when the current market turmoil has been reduced. Many operators are in bankruptcy or have been sold. Little new development is occurring in many areas. In April, 2020, the main benchmark price for oil declined to a negative \$37.63 amid collapsing demand and global oversupply. The wild fluctuation in price is available through the US EIA ¹⁰ . Since 2015, bankruptcies of operators had steadily increased <i>before the corona virus pandemic</i> . ¹¹ Oil prices seem to have settled at around \$40/bbl which is insufficient to support many operations, especially ones in fields that have what the RFD suggests are very low potential.	See the response to comment 50.

Number	Commenter	Comment	Response
106.	Kristen Yannone	<p>Environmental Justice</p> <p>The EA moves from analyzing in detail economic aspects of development that follows leasing to refusing to analyze the impacts from development on environmental justice:</p> <p>Because all three types of EJ populations are known to exist within the counties included in the study area, future site development and production on leased parcels will require an additional Environmental Justice assessment to assess and evaluate potential disproportionate adverse impacts on any EJ population(s) present in the project area.</p>	The BLM resource specialist determined that there were no disproportionate impacts to groups vulnerable to environmental justice issues.
107.	Kristen Yannone	<p>Impacts to Capital Reef National Park and Adjacent Last Chance Wilderness Area</p> <p>The EA indicates that the BLM performed GIS analyses for impacts to viewsheds from four sites in Capital Reef and states at page 54 that less than 10% of the parcels might impact the viewshed. The BLM apparently considers 10% to not meet the threshold of significance for an EIS although the EA does not make this clear. Although the BLM acknowledges that impacts to wilderness must be evaluated, the EA is silent on whether this was done or what the impacts would be. This is an adequate analysis.</p>	Comment noted parcel 034 has been deferred.
108.	Associated Students of the University of Utah	<p>we do not support the lease of over 100,000 acres of public land to oil and gas companies. We support the No Action Alternative described in the EA. If the decision is made to continue with the sale of these lands, I along with the student presidency of the University of Utah are prepared to pass a joint resolution denouncing the sale of the lands and to be submitted in the protest period in August. A joint resolution is an official statement on behalf of all students at the University of Utah. We will also collaborate with other Utah universities to collectively speak against the sale of these lands.</p>	Comment noted.
109.	Duchesne County	<p>Duchesne County, Utah hereby goes on record in support of the leasing of Parcel 035, encompassing 1,280 acres of land within our County, at the BLM's September 2020 Oil and Gas Lease Sale.</p> <p>We support Alternative A of the Environmental Assessment; the Proposed Action. Under this alternative, the BLM would offer for lease all or part of the nominated parcels (covering 114,050 acres around the state) in the lease sale. The leases would include the standard lease terms and conditions for development of the surface of oil and gas leases provided in 43 CFR 3100 (BLM Form 3100-11) along with all stipulations mandated by policy (such as the Competitive Leasing Handbook, H-3120-1) and by the governing Land Use Plans (LUP).</p>	Commented noted.
110.	PLPCO	<p>Our office is aware that there is public concern regarding the potential for the proposed lease sale to impact the spectacularly beautiful areas upon which the tourism and recreation economies rely in Southeastern Utah. In fact, Moab City and Grand County both voted to oppose the September oil and gas lease sale as it applies to Grand County. The State understands these concerns and asks the BLM to re-examine the entire September oil and gas lease sale portfolio in Grand County to ensure that all parcels are in fact compatible with the tremendous recreational values found throughout the area. Additionally, information provided by the public during the formal comment period identifying specific lease parcels that conflict with identifiable recreational uses should receive special consideration as to whether those parcels should be deferred.</p> <p>Oil and gas leasing in the Moab Field Office is governed by protections and stipulations found in the Moab Master Leasing Plan (MLP) which is the only leasing plan of its kind in the entire country. At the time of its creation in 2016, the MLP enjoyed broad support from the recreation and conservation community. The restrictions in the MLP, which are entirely unique to canyon country, were designed to protect the most sensitive and highly valued recreational areas.</p> <p>The local government opposition to this lease sale places a special onus on the BLM to mitigate potential conflicts with tourism and recreation when site specific environmental analysis is</p>	Comment noted. All parcels in Grand County have been deferred.

Number	Commenter	Comment	Response
		conducted prior to approval of any development. The State asks that the BLM include specific language in this EA requiring the forthcoming site specific environmental analysis of parcels located within the Moab Field Office to include a requirement to mitigate, to the extent possible, conflicts with tourism and recreation. This will ensure that all possible action is taken to preserve the unique character of the Moab area.	
111.	PLPCO	If the nominated parcels in the lease sale are developed, spectacular scenic drives such as Highway 313, Potash Road, Dubinky Well Road, Blue Hills Road, Gemini Bridges Road, and Kane Creek Road will see an increase in large truck and construction equipment traffic. This could negatively impact the visitor experience especially for low speed users such as bikers, hikers, and Jeep Safari enthusiasts. The State asks the BLM to outline in the EA the need for large truck traffic associated with development to be concentrated during non-peak hours of the day in order to reduce recreational user conflicts.	Comment noted. All parcels in Grand County have been deferred.
112.	Grand County and Moab City	Grand County hereby requests that the Bureau of Land Management (BLM) cancel those parcels located within Grand County nominated in the September 2020 oil and gas lease sale (DOI-BLM-UT-0000-2020-0004-EA). The BLM proposal to lease over 80,000 acres in the Moab area—most of which lies in Grand County—threatens the core of our tourism economy by locking in long term oil and gas leases on and around popular recreation areas that are vital to our local economy. The last time this volume of leases was auctioned in our community, the action produced multiple lawsuits, the leases were cancelled, and the controversy led to leasing reforms (since discontinued in the last few years) that required better planning and balanced multiple uses of our public lands.	Comment noted. All parcels in Grand County have been deferred.
113.	Grand County and Moab City	Although the environmental assessment that proposes these leases claims that the BLM "coordinated" with Grand County "as a leasing partner" and that "coordination is ongoing," our request to be a cooperating agency for these leases was denied. Had our request to participate in the analysis of these leases been granted, we would have stressed that this sale is likely to produce industrial impacts to many of our most valued recreation sites—such as increased noise, air and light pollution and safety concerns from increased truck traffic particularly along Highway 313 that provides access to dozens of high value BLM recreation areas. These popular recreation sites include the Lone Mesa, Horsethief, and Cowboy campgrounds and at least nine already-overflowing trailheads servicing mountain bikers at several increasingly popular trail systems such as Mag 7 and Navajo Rocks. In addition, many climbing, hiking and canyoneering enthusiasts use Highway 313 to drive to locations such as Spring Canyon, Hell Roaring Canyon and Pucker Pass. Important county roads branch off of Highway 313 leading to the world famous White Rim—such as the Mineral Bottom Road—as well as to popular tourist destinations along Highway 313 such as Dead Horse Point State Park. And of course, Highway 313 is the only road accessing the iconic Canyonlands National Park. This proposal also offers potentially harmful leases along the Blue Hills Road, including at the unique White Wash Sand Dunes OHV area and the popular hiking and mountain biking areas around Bartlett Wash and Tusher Canyon. For Grand County to maintain and grow its economy, these areas must be protected from the impacts that a lease sale of this magnitude could inflict.	Comment noted. All parcels in Grand County have been deferred.
114.	Grand County and Moab City	While the price of oil is low now, only a few years ago the price was several times higher and the Big Flat oil field along Highway 313 had some of the largest producing wells in the country. This could happen again especially if the "energy dominance" agenda of the current administration continues. In addition, the same areas where these leases are proposed already have dozens of current federal and state oil and gas leases. If the price of oil recovers, all these new proposed leases plus all the existing leases could produce at the same time creating significant industrial impacts and safety concerns among some of Grand County's most popular tourist destinations. This leasing proposal—and the many existing leases—are unlikely to produce significant revenue or jobs for Grand County. The Interior Department's new policy of offering royalty waivers to	Comment noted. All parcels in Grand County have been deferred.

Number	Commenter	Comment	Response
		<p>lease holders. Since Apr. 30, BLM has approved 80 applications for "royalty relief in the State of Utah, which approvals reduce the royalty rate on these leases to as low as 2.5%.' 73 percent (58) of these royalty waivers are for leases in the Moab Field Office, and 60 percent (48) are for leases in Grand County, which means that Grand County will receive very little revenue from existing leases.</p> <p>Similarly, the parcels in the September sale are also likely to generate little revenue for Grand County because of royalty waivers, low minimum bids, or non-competitive lease sales. The last three lease sales that included parcels in Grand County (March, September and December of 2019) performed very poorly. In those sales, the BLM offered 17 parcels (24,416 acres) for lease in Grand County - less than 45% of that acreage sold (10,885 acres) and all at the minimum bid of \$2.00/acre^ As a result, the State of Utah received minimal bid revenue from these sales.</p> <p>The remaining, unsold leases are now available for non-competitive leasing, and the state will likely receive minimal (if any) revenue if these leases are sold non-competitively. Yet the parcels sold in this auction will be locked into long-term leases for future development. If these leases do not produce bids and royalties that will generate meaningful revenue to Grand County and the state, then long term leasing in this valuable recreation area is not worth it. While these leases could create some temporary jobs to local contractors to clear well site pads and haul in water, the many long-term threats to Grand County's economy far outweigh any short-term benefits.</p>	
115.	Grand County	Grand County appreciates the BLM's efforts to protect sensitive resources on specific parcels through protective stipulations and lease notices. However, the fact that many of these proposed leases hold "no surface occupancy" stipulations from the 2015 Moab Master Leasing Plan (MLP) and 2008 Resource Management Plan does little to mitigate our concerns because potential oil and gas developments would still require pipelines, flaring (which produces light pollution that violates our Dark Skies Ordinance), emissions, and a significant increase in industrial truck traffic right in the middle of our recreation areas..	Comment noted. All parcels in Grand County have been deferred.
116.	Moab City	Also, delaying environmental analyses for specific parcels until the Application for Permit to Drill (APD) stage fails to consider the broad cumulative impacts that a lease sale of this scale could have on Grand County's economy	Comment noted. All parcels in Grand County have been deferred.
117.	Moab City	This proposal is inconsistent with the City of Moab's commitment to mitigating impacts to climate change and supporting renewable energy.	Comment noted. All parcels in Grand County have been deferred.
118.	Moab City	Methane produced from these proposed well sites—squeezed in among many existing oil and gas leases—will exacerbate a problem that is one of the largest contributors to climate change: oil and gas development. The Four Corners region is already a hot spot and one of fastest warming places in the Lower 48, and this proposal will make that condition worse. All of these concerns run counter to the thriving outdoor economy and high-quality of life that has attracted many tourists and our residents to Moab.	Comment noted. All parcels in Grand County have been deferred.
119.	Terry Fisk	Thank you for the opportunity to provide comments on the September 2020 Utah Competitive Oil and Gas Lease Sale Environmental Assessment (EA), Moab Field Office, DOI-BLM-UT-0000-2020-0004-EA. Please note that my comments are related to the 53 parcels offered for lease sale within the BLM Moab Field Office and Monticello Field Office areas.	Comment noted. There were no parcels in the Monticello Field Office, and all parcels in the Moab Field Office have been deferred. No further comments from this letter are included in this document.
120.	Access Fund	The extensive region affected by the proposed leases in the September 2020 auction encompasses several important established climbing areas. These include Spring Canyon, Hell Roaring Canyon, Mineral Canyon, and The Tombstone/End of the World Butte (see Figure 1).	Comment noted. The parcels in proximity to these areas have been deferred.

<i>Number</i>	<i>Commenter</i>	<i>Comment</i>	<i>Response</i>
		These locations are significant backcountry traditional climbing objectives that are unique given their remote and pristine condition. Climbing sites around Bartlett Wash and Tusher Canyon also stand to be impacted by this lease sale.	
121.	Access Fund	The 2015 Moab Master Leasing Plan, which governs much of the oil and gas leasing and production in this sale, did not contemplate the massive scope of new leases now being offered all at once, especially given the extensive existing oil and gas leases in the region. If developed, we can expect what were once popular high-quality recreation areas to compete with increased industrial vehicle traffic, expanded roads systems, marginalized air and water quality, and new safety concerns—all which will transform Moab’s outdoor recreation brand into an industrial hot spot... and in any case there have been significant changed circumstances since that plan was completed such as evolving recreation use patterns and new and significant wildlifeprotection areas .	Comment noted. All parcels within the Moab MLP have been deferred.
122.	Access Fund	Despite the importance of outdoor recreation to the Moab economy, the BLM proposal’s socioeconomic analysis only considers the marginal benefits <i>to</i> the community <i>from</i> oil and gas developments—which are few—such as royalty payments to counties (which ironically, the administration has deferred during the COVID pandemic), and temporary jobs for local contractors to build roads, clear drill pads, truck in water, and construct associated support facilities. Local restaurants and hotels may also see a short-term uptick in business from the few dozen but mostly temporary oil workers. But this economic activity is miniscule compared to that which is generated by the outdoor recreation economy, especially now that royalty payments to counties are deferred. Unfortunately, the BLM proposal provides no meaningful cumulative impact analysis of how these leases will impact outdoor recreation. Recent studies that analyze US Dept. of Commerce data conclusively indicate that financial investments in conserving public lands generate more than double the number of jobs than oil and gas investments.	Comment noted. All parcels within Grand County have been deferred.
123.	Access Fund	The BLM’s own policies —when developing the Moab Master Leasing Plan—required parcel specific environmental analysis, something the BLM has failed to do in this proposal. While the BLM does provide mitigating “stipulations” and “lease notices” in the proposal such as “no surface occupancy” and “controlled surface use” restrictions, these mitigating measures fail to prevent the long-term marginalization of air and water quality, and visual impairments to the regional landscape and entire ecosystem.	Comment noted. All parcels within the Moab MLP have been deferred.
124.	Access Fund	But perhaps most significant is that even though site specific parcels may have a no surface occupancy limitation, the oil and gas produced from these wells that was directionally drilled from an adjacent parcel (which would cause air/water/noise/visual impacts) all must still be transported to market via 1) new gas pipelines (if the pipelines are even operating , if not this gas will likely be flared or released into the atmosphere), or 2) via truck in the case of oil. All of the oil produced from the proposed leases in this sale located in and around the popular recreation areas just north of Canyonlands National Park would have to be trucked out Highway 313, one of the busiest and important highways in Grand County that services many BLM recreation areas as well as Canyonlands National Park and Dead Horse Point State Park. The vastly increased volume of industrial traffic on Highway 313 is simply inconsistent with Moab’s world-class outdoor recreation economy. These considerations were ignored in the BLM’s proposal.	Comment noted. All parcels within the Moab MLP have been deferred.
125.	Olivia De Sutter	There are multiple parcels included in this sale that are "in proximity" (defined as 10 miles or less by the BLM "Utah BLM Statewide Wilderness Environmental Impact Statement : Final: Pts. A-C. Public Comments, 1990") to domestic single family drinking water sources. These parcels are those near Bridger Jack Mesa, Flat Iron Mesa, Browns Hole, Kane Creek Overlook, and Looking Glass Rock. The numbers of all affected parcels are 113, 117, 118, 119, 120, 121, 122, 123, 124, 127, 132, and 136. It is extremely concerning that the BLM failed to recognize the proximity of these parcels to the drinking water sources of multiple private land owners. Including these parcels in the lease sale would be gross negligence.	Comment noted. All referenced parcels have been deferred.

<i>Number</i>	<i>Commenter</i>	<i>Comment</i>	<i>Response</i>
126.	Olivia De Sutter	The following parcels are within a National Park or Monument's 10 mile buffer, and I request that BLM defer them from the Week of 09/28/2020 Lease Sale: UT-0620-013 Land Within 10 Miles of Bears Ears National Monument - Indian Creek 10 Mile Buffer UT-0920-034 Land Within 10 Miles of Capitol Reef National Park UT-0920-048 Land Within 10 Miles of Canyonlands National Park Land Within 10 Miles of Glen Canyon National Recreation Area UT-0920-052 Land Within 10 Miles of Arches National Park UT-0920-053 Land Within 10 Miles of Arches National Park UT-0920-055 Land Within 10 Miles of Arches National Park UT-0920-056 Land Within 10 Miles of Arches National Park UT-0920-068 Land Within 10 Miles of Canyonlands National Park Land Within 10 Miles of Glen Canyon National Recreation Area UT-0920-069 Land Within 10 Miles of Canyonlands National Park Land Within 10 Miles of Glen Canyon National Recreation Area UT-0920-070 Land Within 10 Miles of Canyonlands National Park Land Within 10 Miles of Glen Canyon National Recreation Area UT-0920-071 Land Within 10 Miles of Canyonlands National Park Land Within 10 Miles of Glen Canyon National Recreation Area UT-0920-072 Land Within 10 Miles of Canyonlands National Park Land Within 10 Miles of Glen Canyon National Recreation Area UT-0920-073 Land Within 10 Miles of Canyonlands National Park Land Within 10 Miles of Glen Canyon National Recreation Area UT-0920-074 Land Within 10 Miles of Canyonlands National Park Land Within 10 Miles of Glen Canyon National Recreation Area UT-0920-075 Land Within 10 Miles of Canyonlands National Park Land Within 10 Miles of Glen Canyon National Recreation Area UT-0920-076 Land Within 10 Miles of Canyonlands National Park Land Within 10 Miles of Glen Canyon National Recreation Area UT-0920-077 Land Within 10 Miles of Canyonlands National Park Land Within 10 Miles of Glen Canyon National Recreation Area UT-0920-078 Land Within 10 Miles of Canyonlands National Park Land Within 10 Miles of Glen Canyon National Recreation Area UT-0920-079 Land Within 10 Miles of Canyonlands National Park Land Within 10 Miles of Glen Canyon National Recreation Area UT-0920-080 Land Within 10 Miles of Canyonlands National Park	Comment noted. All referenced parcels have been deferred
127.	Flat Iron Ranch Residents	parcels: 112, 113, 116, 117, 118, 119, 120, 121, 122, 123, 124, 127, 132, 135, and 136 Are National Treasures and Their Existing Use As A Refuge From Polluted and Crowded Urban Areas Should Be Protected	Comment noted. All referenced parcels have been deferred
128.	Flat Iron Ranch Residents	Development of the parcels could damage or destroy the subdivision's water source.	Comment noted. All referenced parcels have been deferred
129.	Flat Iron Ranch Residents	Development of the parcels could damage or destroy the subdivision's air quality	Comment noted. All referenced parcels have been deferred
130.	Flat Iron Ranch Residents	At least five of the target parcels can only be accessed via the Flat Iron Mesa Road (San Juan County Road 164) which bisects the Flat Iron Mesa Subdivision. Residents and their children, grandchildren and friends continually use this road by car or by walking, to access their homes, visit neighbors and to access the nearby wilderness and will be endangered by heavy industrial traffic on their main road.	Comment noted. All referenced parcels have been deferred

Number	Commenter	Comment	Response
131.	Flat Iron Ranch Residents	On 2/27/2018 we had hydrogen sulfide gas drift onto our development from the Three Mile 24-21D well operated by WESCO located over five miles southwest of our property. We had to stay indoors out of fear of getting sick from the fumes. Several residences in the area were affected by this and there was a newspaper article written about it. https://moabtimes.com/2018/03/01/27548521-after-oil-well-venting-strong-odor-causes-alarm-among-nearby-residents/ . We are extremely concerned about the negative effects generated by parcel leases being located along our property boundary. The health of our family will be negatively impacted by diminished air quality caused by noxious hydrogen sulfide fumes.	Comment noted. All referenced parcels have been deferred
132.	Erik Klump/Bennett Slavsky	I cannot believe that the BLM has foregone that master plan that was originally used to create a sustainable path forward for energy development. Now, you are literally threatening the livelihoods of thousands of people all so oil and gas can develop a few leases. The master plan should be reinstated and these acutiosn should not go forward. I absolutely stand against this auction. Furthermore, on a much grander scale, President Trump's "Energy Dominance" initiative—the initiative the dissolved the Moab Master Leasing Plan—is archaic in its ideals.	Comment noted. All referenced parcels within the MLP been deferred
133.	Edele Heath/Adena Rice	The following parcels may have a significant negative impact on Mexican Spotted Owl Critical Habitat (UT FWS 2004). The Mexican Spotted Owl (<i>Strix occidentalis lucida</i>) is listed as threatened by the FWS, and I request that BLM defer the following parcels from the Week of 09/28/2020 Lease Sale due to their overlap with this species' Critical Habitat: Parcels UT-0920-111, UT-0920-112, UT-0920-113, UT-0920-117, UT-0920-118, UT-0920-119, UT-0920-120, UT-0920-121, UT-0920-122, UT-0920-123, and UT-0920-127.	. Comment noted. All referenced parcels have been deferred



Appendix K – Near Field Air Quality Impacts Analysis, Prepared by Kleinfelder



**NEAR FIELD AIR QUALITY IMPACTS ANALYSIS
WESCO OPERATING, INC.
WEST FERTILIZER PROJECT
MOAB, UTAH
20192814.001A**

October 11, 2019

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A Report Prepared for:



Erik Vernon
Atmospheric Scientist
BLM Utah State Office
440 W 200 S #500
Salt Lake City, Utah 84101

NEAR FIELD Copyright AIR QUALITY IMPACTS ANALYSIS
WESCO OPERATING, INC.
WEST FERTILIZER PROJECT
MOAB, UTAH

Prepared by:

Megan Bangert

Megan Bangert, P.E.
Air Quality Professional
Kleinfelder

Reviewed by:

Dustin Collins

Dustin Collins
Air Quality Project Manager
Kleinfelder

KLEINFELDER
1801 California Street, Suite 1100
Denver, CO 80202
Phone: 303.237.6601
Fax: 303.237.6602

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ACRONYM LIST

ACGIH	American Conference of Governmental Industrial Hygienists
AQ	Air Quality
AQIA	Air Quality Impact Analysis
BLM	Bureau of Land Management
C	Plume Contrast
CASTNET	Clean Air Status and Trends Network
deg K	degrees Kelvin
DATs	deposition analysis thresholds
ΔE	Plume Coloration Parameter
EA	Environmental Assessment
EIS	Environmental Impact Statement
eq/ha-year	equivalents per hectare per year
FLM	Federal Land Manager
g/s	grams per second
g/m^2	grams per meter squared
$g/s/m^2$	grams per second per meter squared
HAPs	Hazardous Air Pollutants
HNO_3	Nitric Acid
hrs	hours
KCNY	Canyonlands Field Airport
KGJT	Grand Junction Regional Airport
kg/ha	kilogram per hectare
kg/ha-year	kilograms per hectare per year
KLF	Kleinfelder
km	kilometer
m	meter
m/s	meters per second
m^2	meters squared
$\mu g/m^2$	micrograms per meter squared
mg/m^3	milligrams per meters cubed
MEI	Maximum Exposed Individual
MEP	Master Exploration Plan
MERP	Modeled Emission Rates for Precursors
MLE	Most Likely Exposure



MOU	Memorandum of Understanding
NAAQS	National Ambient Air Quality Standards
NAD83	North American Datum of 1983
NEPA	National Environmental Policy Act
NIOSH	National Institute for Occupational Safety and Health
NO	Nitric oxide
NOx	Nitrogen oxides
NO ₂	Nitrogen dioxide
N ₂ O	Nitrous oxide
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
NWS	National Weather Service
OLM	Ozone Limiting Method
PM _{2.5}	Particulate matter less than 2.5 µm in diameter
PM ₁₀	Particulate matter less than 10 µm in diameter
ppb	parts per billion
ppm	parts per million
PSD	Prevention of Significant Deterioration
REL	Reference Exposure Limit
RfC	Reference Concentrations for Chronic Inhalation
RFD	Reasonably Foreseeable Development
SIL	Significant Impact Level
SO ₂	Sulfur dioxide
tpy	tons per year
TLV	Threshold Limit Value
TSL	Toxic Screening Levels
µg/m ³	micrograms per meters cubed
UDAQ	Utah Division of Air Quality
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
UTM	Universal Transverse Mercator
VOC	Volatile organic compounds
WBAN	Weather Bureau Army Navy
Wesco	Wesco Operating Inc.

Executive summary

Wesco Operating, Inc. (Wesco) completed near-field modeling using AERMOD in order to determine the impacts of constructing, operating, and maintaining forty-five (45) production wells on fifteen (15) production pads approximately 10 to 22 (air) miles northwest of Moab, Utah, referred to as the West Fertilizer Project. This report, hereafter called an air quality impacts analysis (AQIA), details the emissions sources, planned operations and development, and the potential air quality impacts within and near the Project Area.

The modeling and impacts analysis followed the methodology as cited throughout the AQIA and specifically the modeling protocol submitted to the Bureau of Land Management (BLM) on March 15, 2019 (KLF Modeling Protocol, 2019). The results from the dispersion modeling showed no potential exceedances of any of the criteria pollutant National Ambient Air Quality Standards (NAAQS) within the Project Area or at either of the Class I areas near the Project Area. Modeled hazardous air pollutants (HAP) concentrations were compared to the Reference Concentrations for chronic inhalation (RfC) exposure, Reference Exposure Levels (REL) for acute inhalation exposures, the State of Utah's Toxic Screening Levels (TSLs) the State of California's REL, the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs) and National Institute for Occupational Safety and Health (NIOSH) REL. There were no exceedances of these values for benzene, toluene, ethylbenzene, n-Hexane, or formaldehyde. Cancer risks were also evaluated using the Carcinogenic Inhalation Unit Risk (IUR) (USEPA, 2018b). Cancer risk for all HAPs evaluated in the model were below the threshold of 10 in a million (10 E-06) (USEPA, 2006). Hazard indexes of the modeled HAPs were analyzed and the hazard quotient for the Project was found to be below 1. A Potential for Significant Deterioration (PSD) increment model was completed to demonstrate the West Fertilizer Project's continuous, lifetime emissions do not have the potential to consume increments of the criteria pollutants. Based on recent guidance to evaluate secondary impacts such as ozone and secondary PM_{2.5}, the Project's emissions were evaluated to demonstrate the West Fertilizer Project potential impacts are considerably below the significant impact level (SIL) for ozone and secondary PM_{2.5}. A Level 2 visibility analysis was completed assuming the worst-case one percent metrological conditions and no exceedances were found inside the Class I Areas. A dry deposition analysis was completed on both sulfur dioxide (SO₂) and nitrogen dioxide (NO₂). The results were compared to annual deposition trends in Canyonlands National Park in order to determine the impact of the project on local deposition. Local deposition values for NO₃ and SO₄ were added to the deposition results for the Project and compared to the Deposition Analysis Thresholds (DATs) developed by the National Parks Service (NPS) and the

United States Fish and Wildlife Services (USFWS) and the critical load numbers for each Class I area from FLAG (2010). The deposition analysis results for the Project were found to exceed the DATs, however, the Project deposition results were considerably lower than the local deposition values for Canyonlands and Arches for 2018. Furthermore, the additive result of current local deposition values at Canyonlands and Arches and estimated Project impacts were found to be considerably lower than the critical load factor for each of the National Parks.

1 Introduction

Wesco proposes to drill, complete, and produce up to 45 exploratory oil and gas wells from 15 new well pads in the West Fertilizer project area. The project area is located on land managed by the BLM, approximately 10 miles north of Canyonlands National Park and 10 miles west of Arches National Park, both Class I airsheds and thus requiring the need for the proposed project to comply with the National Environmental Policy Act (NEPA). The wells would be drilled to produce federal minerals from the Cane Creek shale in the Paradox Formation of the Pennsylvanian Hermosa Group. The wells would be drilled vertically to total depths ranging from 7,000 to 8,000 feet and then horizontally 4,800 to 8,000 feet in the target zone. Wesco plans to drill 3 to 6 wells each year over a period of eight years. The anticipated life of a producing well is estimated to be 30 years.

The 15 West Fertilizer well pads would be located approximately 10 to 22 (air) miles northwest of Moab, Utah, in and near the Bartlett Flat area in the West Fertilizer seismic survey area, which includes approximately 35,011 acres of BLM-administered federal land and 3,773 acres of land owned by the State of Utah, administered by the State Institutional Trust Lands Administration. This report outlines the near field modeling results of the AQIA for the proposed project area. An emissions inventory was developed for the first 10 years of the project lifespan. Year 8 was determined to be the year with the maximum emissions, so this year was used in the model to determine the maximum impacts to air quality during the lifespan of the project. Short-term emissions in Year 8 were modeled to determine maximum potential impacts from the following activities:

- Two (2) drilling/construction pads.
- One (1) completion pad; and
- Twelve (12) production pads, three of which also had workovers and pumping units.

Annual NO₂ and deposition model runs in Year 8 were completed assuming the maximum number of wells drilled in a year, with the emissions from the following activities:

- Five (5) drilling/production pads with two producing pads operating when drilling activities are not occurring;
- One (1) drilling/completion pad; and
- Nine (9) production pads, three of which also had workovers and pumping units.

Section 2 of this report describes the background of the West Fertilizer Project and the purpose of this report. Section 3 details the emissions sources that were modeled and contains tables of the project emissions and cumulative source emissions. Section 4 describes the methodology used in the model along with assumptions, scenarios modeled, and parameters used. Section 5 contains the results of the near-field models and details the findings. Appendix A contains figures of the Project Area, pad layouts as they were modeled, receptor grids, contour plots of the all NAAQS model runs and contour plots showing the distance to the one in one million cancer risk for all applicable HAPs. Appendix B contains the emissions inventory for the entire project.

2 Background

2.1 Purpose of Report

This report outlines the information and methodologies that are presented in the AQIA for each modeling scenario. An emissions inventory was developed that demonstrates emissions associated with this project for the first 10 years. From the emission inventory, it was determined that Year 8 will have the highest emissions due to the fact that all of the operations (e.g., drilling, completions, production) will be occurring simultaneously. All emission sources modeled were completed with emission rates associated with Year 8 of the project lifespan. PSD modeling was completed assuming that drilling and construction is complete, and all wells are producing.

This West Fertilizer AQIA discusses the near field impacts due to project emissions from construction, drilling, completion, production, and cumulative emissions. Conservative assumptions were made in the emissions calculations in order to most accurately account for all emissions sources. Near field impacts were analyzed through the use of AERMOD and compared to applicable state and federal standards as discussed further in Section 4.

2.2 Project Information

The 15 West Fertilizer well pads would be located approximately 10 to 22 (air) miles northwest of Moab, Utah, in and near the Bartlett Flat area in the West Fertilizer seismic survey area, which includes approximately 35,011 acres of BLM-administered federal land and 3,773 acres of land owned by the State of Utah, administered by the State Institutional Trust Lands Administration.

A topographic map of the proposed project area is shown in Figure 1 in Appendix A. All coordinates shown in the tables in this report will be presented in Universal Transverse Mercator, North American Datum of 1983, Zone 12 North (UTM NAD83 Zone 12N). Likewise, all modeling files contain locations for the sources in the same coordinate system.

3 Emission Sources Modeled

Detailed information and methodologies for project emissions can be found in Section 4 of this report. The following is an overview of the development of the emission inventories and what pollutants and sources were calculated.

3.1 West Fertilizer Project Emissions

The project emissions are divided into three (3) categories and include the following:

- Drilling and Construction;
- Completions; and
- Routine Operations.

Emissions were modeled for Year 8 of the project, which was estimated to be the year with the highest emissions in that the maximum number of wells being drilled, completed, and produced occur in Year 8. Two pads were assumed to be drilling and construction locations, one pad was assumed to be a completion location, and twelve pads were assumed to be production locations, for all averaging periods and pollutants other than annual NO₂. Workover emissions were conservatively assumed to occur on three of the production pads because workovers will likely occur 6 to 12 months after the pumping unit is installed and six wells will be drilled a year with 3 wells on each pad. This assumes that 9 wells will be worked over in a year, but it will likely be less than that. Workover emission sources were assumed to occur for all three wells on each pad on a short-term and long-term basis in order to show the worst-case impacts from each location. The annual NO₂ model was run to estimate impacts from six (6) wells drilled in one year. Figure 10 shows which pads were modeled for combined drilling and production annual emissions. Five drilling/production pads were assumed to have two producing wells and one drill rig. The

production equipment was assumed to not operate at the same time as the drilling equipment. One completion/drilling pad was also modeled in the annual scenarios.

Each of the above emission categories is further divided into subcategories based on equipment and processes and generally includes emissions associated with the following:

- Fuel combustion emissions from non-mobile sources;
- On-road tailpipe emissions from vehicle traffic;
- Non-road equipment tailpipe emissions;
- Fugitive dust emissions; and
- Fugitive emissions from oil and gas operations.

For each category, emissions were estimated for the following criteria pollutants and HAP pollutants, as applicable:

- Nitrogen oxides (NO_x);
- Carbon monoxide (CO);
- Sulfur dioxide (SO₂);
- Particulate matter less than 10 microns (PM₁₀);
- Particulate matter less than 2.5 microns (PM_{2.5});
- Benzene;
- Toluene;
- Ethylbenzene;
- Xylenes;
- n-hexane; and
- Formaldehyde.

In general, emissions were calculated on both a short-term and a long-term basis to support hourly, daily, and annual average modeling for comparison to the NAAQS. Emissions were also summarized on an annual basis based on the project schedule to identify the time periods when emissions would be highest to help define the maximum emissions year. Emission rates for all modeling scenarios are detailed in Tables 3-1 through 3-4 below. Rates were input into each of the models based on whether they were project sources and non-project cumulative sources (herein referred to as cumulative sources). For



distinction purposes, these categories have been tabulated separately within this report and in AERMOD, were divided into project and non-project groups. This is described in detail further within this Section.

As shown in Tables 3-1 through 3-3, in order to reduce the number of model runs, some of the HAPs were modeled as a single unitized emission rate and then the AERMOD results scaled by actual emission rates of each HAP (benzene, toluene, ethylbenzene, xylenes, and n-hexane). Individual model runs were performed for formaldehyde and benzene, so as to demonstrate the conservative nature of the unitized run. Maximum hourly emissions were entered into the model for all averaging periods. Construction emissions were included in the annual emissions for new pads in order to determine compliance with the annual standards.

Table 3-1
PROJECT EMISSIONS RATES AND ASSUMPTIONS FOR CONSTRUCTION/DRILLING PADS

Source Description	Source ID	NO _x Hourly (g/sec)	NO _x Annual (g/sec)	CO Hourly (g/sec)	SO ₂ Hourly (g/sec)	SO ₂ Annual (g/sec)	PM ₁₀ Daily (g/sec)	PM _{2.5} Daily (g/sec)	PM _{2.5} Annual (g/sec)	HCHO (g/sec)	Benzene (g/sec)	Toxics (g/sec)
Gravel Roads and Pad Construction - Nonroad Tailpipe - Pad	PADNR	-	8.24E-04	-	-	3.99E-06	-	-	6.04E-03	2.58E-03	1.79E-04	1.00
Gravel Roads and Pad Construction - Nonroad Tailpipe - Road	GRVLNRD	-	4.17E-05	-	-	2.08E-07	-	-	6.44E-04	1.19E-04	8.33E-06	1.00
Drill Rig Engines	DRLENG	2.54	2.09E-01	1.38	2.91E-03	2.39E-04	7.93E-02	7.93E-02	6.52E-03	1.32E-04	1.30E-03	1.00
Drill Rig Generators	DRLGEN	4.36E-02	8.95E-03	3.81E-02	7.23E-03	1.47E-03	3.50E-03	3.50E-03	7.19E-04	2.91E-05	2.30E-05	1.00
Drill Rig Gas Venting	DRLFLR	-	-	-	-	-	-	-	-	-	7.47E-02	1.00
Drilling Onroad Tailpipe	DRLTP	4.21E-04	3.21E-05	1.71E-04	2.47E-06	1.91E-07	2.01E-02	2.03E-03	2.02E-04	3.06E-06	2.79E-07	1.00

1. 8-hour standard model run for CO was modeled using the maximum hour emission rate.
2. 3 hour and 24-hour standard model run for SO₂ was modeled using the maximum emission rate. 24-hour SO₂ was only modeled in the PSD increment model runs.
3. Annual emissions were based on maximum annual emissions for the 10-year project lifespan (Year 8).
4. Road emissions were divided equally among the series of volume sources. The number of volume sources depends on the modeled road length.
5. Short-term emission rates only include emissions from the drilling scenario (the higher emissions scenario), as construction and drilling will not occur on the same day.
6. SO₂ Annual emissions were only used in the deposition model runs.

**Table 3-1
ONSITE PROJECT EMISSIONS RATES AND ASSUMPTIONS CONSTRUCTION/DRILLING PADS (cont.)**

Source Description	Source ID	Assumption Notes
Gravel Roads and Pad Construction - Nonroad Tailpipe - Pad	PADNR	Emissions from construction of the pads and roads were scaled based on the area of the pad compared to the total area of the pad and the road.
Gravel Roads and Pad Construction - Nonroad Tailpipe - Road	GRVLNR D	Emissions were scaled based on the area of the road segment compared to the total area of the pad and the road. Road emissions are divided equally amount each road segment. Emissions were combined for road and pad construction.
Drill Rig Engines	DRLENG	Emissions were calculated assuming three (3) 1,476-hp engines at 43% load were operating for a total 720 hours per well drilled.
Drill Rig Generators	DRLGEN	Emissions were calculated by assuming two (2) generator engines operating for a total of 1,800 hours per well drilled.
Drill Rig Gas Venting	DRLFLR	Emissions were calculated assuming one (1) hour of gas venting per drill.
Drilling Onroad Tailpipe	DRLTP	Emissions were scaled based on length of modeled road by the average trip distance on unpaved roads and divided equally among each road segment. Emissions were combined for drilling tailpipe and drilling traffic dust.

**Table 3-2
PROJECT EMISSIONS RATES AND ASSUMPTIONS FOR COMPLETION PAD**

Source Description	SourceID	NOx Hourly (g/sec)	NOx Annual (g/sec)	CO Hourly (g/sec)	SO ₂ Hourly (g/sec)	SO ₂ Annual (g/sec)	PM ₁₀ Daily (g/sec)	PM _{2.5} Daily (g/sec)	PM _{2.5} Annual (g/sec)	HCHO Hourly (g/sec)	Benzene Hourly (g/sec)	Toxics (g/sec)
Completion Pit Flares	CMPFLR	2.28E-01	1.88E-03	1.04	-	-	8.06E-07	8.06E-07	1.59E-07	1.13E-01	2.07E-02	1.00
Completion Testing Tanks	CMPTNK	-	-	0.00	-	-	-	-	-	-	1.68E-03	1.00
Wind Erosion	WIND	-	-	-	-	-	6.31E-03	9.46E-04	9.46E-04	-	-	-
Completion Tailpipe	CMPVOL	1.57E-04	1.79E-06	1.28E-04	9.69E-07	-	5.97E-03	5.97E-04	1.40E-05	1.13E-06	1.35E-07	1.00

1. SO₂ Annual emissions were only used in the deposition model runs. Completions were not included in the PSD model runs.
2. Benzene emissions for the completion testing tanks are the annualized hourly emissions, which reflect the value used in the refined receptor grid run. The maximum hourly emissions (1.47E-01 g/sec) was used in the full grid receptor model run.

Source Description	SourceID	Assumption Notes
Completion Pit Flares	CMPFLR	Emissions calculated assuming a pit flare efficiency of 80%. 1 MMscf was assumed to be flared per completion and flaring was assumed to occur for three (3) days for 24 hours per day. Maximum hourly emissions were calculated assuming one (1) hour of flaring 1 MMscf of gas.
Completion Testing Tanks	CMPTNK	Emissions were calculated assuming 1,000 bbls throughput per test. Four (4) tanks are used for each test for 100 hours per test. Short-term emissions were annualized in the refined grid model in order to more accurately show the emissions from the tanks.
Wind Erosion	WIND	Emissions were scaled based on the size of the pad.
Completion Tailpipe	CMPTP	Emissions were scaled based on length of modeled road by the average trip distance on the unpaved road and divided equally among each road segment.

Table 3-3

PROJECT EMISSIONS RATES AND ASSUMPTIONS FOR PRODUCTION/WORKOVER PADS

Source Description	SourceID	NOx Hourly (g/sec)	NOx Annual (g/sec)	CO Hourly (g/sec)	SO ₂ Hourly (g/sec)	SO ₂ Annual (g/sec)	PM ₁₀ Daily (g/sec)	PM _{2.5} Daily (g/sec)	PM _{2.5} Annual (g/sec)	HCHO Hourly (g/sec)	Benzene Hourly (g/sec)	Toxics (g/sec)
Well Pumping Units	OPSPU	1.12E-01	1.12E-01	2.22E-01	1.15E-04	1.15E-04	3.79E-03	3.79E-03	3.79E-03	4.01E-03	3.09E-04	1.00
Well Generators	OPSGEN	3.47E-02	3.47E-02	6.94E-02	8.71E-05	8.71E-05	2.87E-03	2.87E-03	2.87E-03	3.03E-03	2.34E-04	1.00
Well Heaters	OPSHEAT	1.11E-01	4.29E-02	9.34E-02	6.67E-04	2.57E-04	8.45E-03	8.45E-03	3.26E-03	8.34E-05	2.33E-06	1.00
Well Tank Combustors	OPSCOMB	5.36E-06	5.36E-06	2.44E-05	-	-	-	-	-	2.87E-06	4.34E-06	1.00
Workover Flares	WRKFLR	3.29E-03	1.13E-04	1.50E-02	-	-	-	-	-	2.93E-04	7.47E-05	1.00
Workover Engines	WRKENG	8.00E-01	2.74E-02	4.33E-01	9.17E-04	3.14E-05	1.04E-02	1.04E-02	8.56E-04	4.18E-05	6.84E-05	1.00
Workover Generators	WRKGEN	4.36E-02	1.49E-03	3.81E-02	7.23E-03	2.48E-04	1.46E-03	1.46E-03	1.20E-04	2.91E-05	2.30E-05	1.00
Operations Wind Erosion Dust	OPSPFD	-	-	-	-	-	6.31E-03	9.46E-04	9.46E-04	-	-	1.00
Well Fugitive Leak, Loading, and Pneumatic Controllers	OPSFUG	-	-	-	-	-	-	-	-	-	1.39E-04	1.00
Operations Fugitive Road Sources	OPSVOL	1.72E-04	1.15E-05	2.21E-04	1.12E-06	9.46E-08	1.68E-02	1.68E-03	1.25E-03	1.22E-06	1.85E-07	1.00

1. SO₂ Annual emissions were only used in the deposition model runs.
2. In the benzene refined grid run, Pads 2 through 4 were assumed to be workover pads with no production equipment to estimate worst-case 1-hour impacts.

Source Description	SourceID	Assumption Notes
Well Pumping Units	OPSPU	Emissions calculated assuming engine operates 8760 hours per year. Each well will have one pumping unit. Pumping units are installed a few years after the wells is drilled. Pumping units are modeled on all of the wells of three pads in order to determine maximum impacts from the engines.

Source Description	SourceID	Assumption Notes
Well Generators	OPSGEN	Emissions calculated assuming engine operates 8760 hours per year. Each well will have one generator.
Well Heaters	OPSHEAT	Heaters are only operated during the cold months. The heater treater heater is only used half of the year while the separator heater and the line heaters are only used for a quarter of the year. These operational hours were factored in for the annual emission rates. The short-term emission rates were calculated using the maximum hourly emissions. Each well has one separator heater, one heater treater heater, and one line heater.
Well Tank Combustors	OPSCOMB	All storage tanks are controlled by enclosed combustor with 95% control efficiency.
Workover Flares	WRKFLR	Workover emissions are controlled by onsite open flares with 95% control efficiency. Workovers occur for a total of 50 hours with 10 Mscf of gas per workover. Workovers only occur after a well has been producing for a few years and is on artificial lift. Three wells were assumed to have workovers on them in the model.
Workover Engines	WRKENG	Each workover uses a total of 1,000-hp engines at 60% load for 10 hours per day for 5 days. Workovers only occur after a well has been producing for a few years and is on artificial lift. Three wells were assumed to have workovers on them in the model.
Workover Generators	WRKGEN	Each workover uses two 20-hp generator engines for 10 hours per day for 5 days. Workovers only occur after a well has been producing for a few years and is on artificial lift. Three wells were assumed to have workovers on them in the model.
Operations Wind Erosion Dust	OPSFDF	Emissions are spread across the area of the pad.
Well Fugitive Leak, Loading, and Pneumatic Controllers	OPSFUG	Emissions combined for pneumatic controllers, fugitive leaks from components, and truck loading. Emissions are spread across the area of the pad.

Source Description	SourceID	Assumption Notes
Operations Fugitive Road Sources	OPSVOL	Emissions combined for on-road tailpipe and operations traffic dust. Emissions were scaled based on length of modeled road by the average trip distance on unpaved roads and divided equally among each road segment.

Table 3-4
PROJECT EMISSIONS RATES AND ASSUMPTIONS FOR ANNUAL DRILLING/PRODUCTION PADS
PADS 5, 6, 8, 11, AND 12

Source Description	SourceID	NO _x Annual (g/sec)
Drill Rig Engines	DRLENG	2.09E-01
Drill Rig Generators	DRLGEN	3.11E-01
Drilling Onroad Tailpipe	DRLTP	3.21E-05
Well Generators	OPSGEN	2.72E-02
Well Heaters	OPSHEAT	2.24E-02
Well Tank Combustors	OPSCOMB	2.80E-06
Operations Wind Erosion Dust	OPSPFD	-
Well Fugitive Leak, Loading, and Pneumatic Controllers	OPSFUG	-
Operations Fugitive Road Sources	OPSVOL	3.18E-06

- 1) There will be 2 producing wells and 1 well drilled on a drill/production pad for the annual run.
- 2) Volume source emissions are scaled to the length of the road in the model, so the emissions will be multiplied by how many volume sources the associated road contains.
- 3) Pad 1 is a Drilling/Completion Pad and includes drilling emissions.
- 4) Production sources will be operational when not being drilled (6860 hours/year)

3.2 Cumulative Emissions

Emissions from existing and proposed development were also considered in the West Fertilizer AQIA. Emission sources within a 50 kilometer (km) radius of the Project Area were analyzed as part of the near field modeling. Table 3-5 lists the cumulative sources and their distance from the

Project Area, and Figure 2 in Appendix A shows the locations of the sources. The sources are existing sources unless otherwise noted as reasonably foreseeable developments (RFD).

Sources included as RFDs are those with approved drilling permits or final or draft environmental assessments that have been fully scoped. Emissions used in the AQIA for the cumulative sources were obtained from existing air permits with Utah Division of Air Quality (UDAQ), similar facility emissions, submitted actual emissions inventories, or other analyses such as an AQIA or Environmental Assessment (EA).

**Table 3-5
CUMULATIVE SOURCES WITHIN 50 KM OF PROPOSED WEST FERTILIZER PROJECT**

Name of Facility	UTM NAD83 Zone 12 Easting (meters)	UTM NAD83 Zone 12 Northing (meters)	Miles from Project Area	Direction from Project Area
Blue Hills Gas Plant	600,694	4,293,967	11	north-northeast
Cane Creek 1-1 Tank Battery	606,454	4,269,674	7	southeast
Cane Creek 2-1 Tank Battery	605,918	4,270,099	7	southeast
Cane Creek 7-1, 7-2, 7-3 Tank Battery	609,016	4,268,772	9	southeast
Cane Creek 8-1, 8-2 Tank Battery	609,720	4,268,276	9	southeast
Cane Creek 12-1 Tank Battery	606,843	4,268,064	8	southeast
Cane Creek 24-1 & 24-2 Tank Battery	606,863	4,265,606	9	southeast
Cane Creek 36-1, 36-2, 36-3 Tank Battery	606,247	4,270,862	7	southeast
Cane Creek Unit 2-1-25-18	595,595	4,278,986	2	north-northwest
Cane Creek Unit 13-1 Tank Battery	607,437	4,266,772	9	southeast

Name of Facility	UTM NAD83 Zone 12 Easting (meters)	UTM NAD83 Zone 12 Northing (meters)	Miles from Project Area	Direction from Project Area
Cane Creek Unit 16-2-25-18 Tank Battery	592,892	4,276,755	2	west
Cane Creek 17-1 Tank Battery	610,287	4,266,120	11	southeast
Cane Creek Unit 18-1 & 18-2 Tank Battery	609,052	4,267,203	10	southeast
Cane Creek Unit 26-2 & 26-3 Tank Battery	605,024	4,273,183	6	east-southeast
Cane Creek Unit 28-2 Tank Battery	602,695	4,272,967	4	southeast
Cane Creek Unit 32-1-25-19	599,847	4,271,069	4	south-southeast
Cane Creek Unit 32-1-25-20	610,175	4,270,991	9	east-southeast
Cane Creek Unit 36-1-25-18	597,665	4,271,015	4	south
Dubinky Booster Station	599,142	4,280,872	3	northeast
Green River Utah Refinery	577,719	4,315,533	27	north-northwest
Greentown Gas Plant	590,326	4,301,796	16	north-northwest
Gunnison Valley Unit 22-1 ¹	583,455	4,303,999	19	north-northwest
GVU 29-1 ¹	591,152	4,302,467	17	north
Hatch Point 1	624,931	4,237,400	30	southeast
Intrepid Potash Facility	622,800	4,273,600	17	east
Kane Springs 16-1 SWD	592,098	4,275,757	3	west
Kane Springs 25-19-34-1	603,975	4,272,153	5	southeast
Kane Springs 27-1	603,866	4,272,905	5	east-southeast
Kane Springs Fed 10-1	594,058	4,277,761	2	northwest
Kane Springs Federal 19-1A	608,756	4,264,431	11	southeast
Long Canyon 1	611,691	4,268,348	11	east-southeast
Moab Aggregate Plant	634,550	4,261,045	25	southeast
Salt Wash #2 ¹	579,721	4,296,651	16	northwest
Spanish Valley Aggregate & HMA Facility	635,924	4,258,835	27	southeast
Three Mile 12 Site	626,137	4,239,293	30	southeast
Tidewater 1-31-2218 ¹	597,107	4,310,069	21	north
Tidewater 17-14H-2119 ¹	599,603	4,315,256	24	north
Tidewater 21-21H-2119 ¹	601,614	4,314,919	24	north-northeast

1. These facilities are reasonably foreseeable developments and not yet operational.

Total emissions from each cumulative source was modeled as a single point source with emitting parameters based on the stack of the predominant emission source as submitted to the BLM on March 15, 2019 (KLF Source Parameters, 2019). The modeling parameters and emission rates of the cumulative emission sources are detailed in Table 3-6 below.

HAPs were not modeled for cumulative sources because potential health effects from HAPs are assessed as an incremental increase due to the proposed West Fertilizer project, not cumulative.

**Table 3-6
MODELING PARAMETERS AND EMISSIONS RATES FOR CUMULATIVE SOURCES**

Source Description	Source ID	Stack Height (m)	Stack Temp (deg K)	Stack Velocity (m/s)	Stack Diameter (m)	NO _x /NO _x ratio	NO _x Hourly (g/sec)	NO _x Annual (g/sec)	CO Hourly (g/sec)	SO ₂ Hourly (g/sec)	SO ₂ Annual (g/sec)	PM ₁₀ Daily (g/sec)	PM _{2.5} Daily (g/sec)	PM _{2.5} Annual (g/sec)
Blue Hills Gas Plant ¹	BHGP	7.62	807.04	91.42	0.15	0.50	3.05E-01	3.05E-01	1.43E-01	2.65E-04	2.65E-04	3.48E-05	3.48E-05	3.48E-05
Cane Creek 1-1 Tank Battery ¹	CC1_1	6.10	719.26	20.42	0.10	0.50	2.57E-02	2.57E-02	1.92E-02	1.11E-04	2.54E-05	2.84E-04	0.00E+00	8.52E-03
Cane Creek 2-1 Tank Battery ¹	CC2_1	6.10	719.26	20.42	0.10	0.50	2.57E-02	2.57E-02	1.92E-02	1.11E-04	1.11E-04	1.56E-03	1.56E-03	1.56E-03
Cane Creek 7-1, 7-2, 7-3 Tank Battery	CC7_1_2_3	6.10	719.26	20.42	0.10	0.50	7.54E-01	7.54E-01	1.20E-01	3.54E-04	3.54E-04	2.98E-03	1.16E-02	2.98E-03
Cane Creek 8-1, 8-2 Tank Battery ¹	CC8_1_2	6.10	719.26	20.42	0.10	0.50	2.47E-01	2.47E-01	3.63E-01	3.82E-04	8.73E-05	9.42E-04	0.00E+00	2.83E-02
Cane Creek 12-1 Tank Battery ¹	CC12_1	6.10	719.26	20.42	0.10	0.50	6.15E-01	6.15E-01	1.00E+0	3.39E-04	3.39E-04	4.97E-03	4.97E-03	4.97E-03
Cane Creek 24-1 & 24-2 Tank Battery ¹	CC24_1_2	6.10	719.26	20.42	0.10	0.50	2.47E-01	2.47E-01	3.63E-01	3.82E-04	8.73E-05	9.42E-04	0.00E+00	2.83E-02
Cane Creek 36-1, 36-2, 36-3 Tank Battery ¹	CC36_1_2_3	6.10	719.26	20.42	0.10	0.50	7.54E-01	7.54E-01	9.40E-01	6.89E-04	6.89E-04	9.34E-03	9.34E-03	9.34E-03
Cane Creek Unit 2-1-25-18 ¹	CC21_2518	6.10	719.26	20.42	0.10	0.50	2.22E-02	2.22E-02	1.55E-02	9.26E-05	9.26E-05	1.32E-03	1.32E-03	1.32E-03
Cane Creek Unit 13-1 Tank Battery ¹	CC13_1	6.10	719.26	20.42	0.10	0.50	9.85E-01	9.85E-01	1.62E+0	4.80E-04	4.80E-04	7.09E-03	7.09E-03	7.09E-03
Cane Creek Unit 16-2-25-18 Tank Battery ¹	CC16_2_25_18	6.10	719.26	20.42	0.10	0.50	3.14E-02	3.14E-02	1.19E-01	0.00E+0	0.00E+0	5.75E-04	5.75E-04	5.75E-04
Cane Creek 17-1 Tank Battery ¹	CC17_1	6.10	719.26	20.42	0.10	0.50	4.97E-01	4.97E-01	7.68E-01	5.38E-04	5.38E-04	7.34E-03	7.34E-03	7.34E-03
Cane Creek Unit 18-1 & 18-2 Tank Battery ¹	CC18_1_2	6.10	719.26	20.42	0.10	0.50	2.47E-01	2.47E-01	3.63E-01	3.82E-04	3.82E-04	5.16E-03	5.16E-03	5.16E-03
Cane Creek Unit 26-2 & 26-3 Tank Battery ¹	CC26_2_3	6.10	719.26	20.42	0.10	0.50	9.74E-01	9.74E-01	9.56E-01	5.12E-04	5.12E-04	7.13E-03	7.13E-03	7.13E-03
Cane Creek Unit 28-2 Tank Battery ¹	CC28_2	6.10	719.26	20.42	0.10	0.50	8.42E-01	8.42E-01	1.37E+0	5.05E-04	5.05E-04	5.93E-03	5.93E-03	5.93E-03
Cane Creek Unit 32-1-25-19 ¹	CC3212519	6.10	719.26	20.42	0.10	0.	3.09E-01	3.09E-01	4.79E-01	3.11E-04	3.11E-04	4.32E-03	4.32E-03	4.32E-03

Source Description	Source ID	Stack Height (m)	Stack Temp (deg K)	Stack Velocity (m/s)	Stack Diameter (m)	NO ₂ /NO ratio	NO _x Hourly (g/sec)	NO _x Annual (g/sec)	CO Hourly (g/sec)	SO ₂ Hourly (g/sec)	SO ₂ Annual (g/sec)	PM ₁₀ Daily (g/sec)	PM _{2.5} Daily (g/sec)	PM _{2.5} Annual (g/sec)
						50								
Cane Creek Unit 32-1-25-20 ¹	CC3212520	6.10	719.26	20.42	0.10	0.50	2.57E-02	2.57E-02	1.92E-02	1.11E-04	2.54E-05	2.84E-04	0.00E+00	8.52E-03
Cane Creek Unit 36-1-25-181	CC26_1_25_18	6.10	719.26	20.42	0.10	0.50	2.57E-02	2.57E-02	1.92E-02	1.11E-04	2.54E-05	2.84E-04	0.00E+00	8.52E-03
Dubinky Booster Station1	DBOOST	4.05	763.15	23.17	0.20	0.50	1.34E-01	1.34E-01	1.57E+0	6.83E-04	6.83E-04	4.82E-03	4.82E-03	4.82E-03
Green River Utah Refinery	GRUR	40.22	429.82	15.54	0.67	0.50	3.75E-01	3.75E-01	3.52E-01	6.51E-01	6.51E-01	2.97E-01	1.69E-01	1.69E-01
Greentown Gas Plant	GRTWNGP	7.62	807.04	91.42	0.15	0.50	2.53E-01	2.53E-01	4.20E-01	1.27E-02	1.27E-02	2.30E-03	2.30E-03	2.30E-03
Gunnison Valley Unit 22-1	GVU22_1	6.10	719.26	20.42	0.10	0.50	1.90E-01	1.90E-01	3.35E-01	0.00E+0	0.00E+0	8.05E-03	8.05E-03	8.05E-03
GVU 29-1	GVU29_11	6.10	719.26	20.42	0.10	0.50	3.66E-01	3.66E-01	5.11E-01	0.00E+0	0.00E+0	8.14E-03	8.14E-03	8.14E-03
Hatch Point 1	HATCHPT1	6.10	719.26	20.42	0.10	0.50	6.79E-03	6.79E-03	2.56E-03	0.00E+0	0.00E+0	1.48E-04	1.48E-04	1.48E-04
Intrepid Potash Facility	INTRPDP	27.12	337.59	0.25	1.01	0.50	1.50E+0	1.50E+0	1.26E+0	9.49E-03	9.49E-03	1.01E+0	1.49E-01	1.49E-01
Kane Springs 16-1 SWD1	KS161SWD	6.10	719.26	20.42	0.10	0.50	3.58E-01	3.58E-01	5.63E-01	3.06E-04	3.06E-04	4.32E-03	4.32E-03	4.32E-03
Kane Springs 25-19-34-11	KS2519341	6.10	719.26	20.42	0.10	0.50	3.21E-01	3.21E-01	5.25E-01	1.35E-04	1.35E-04	2.14E-03	8.34E-04	2.14E-03
Kane Springs 27-11	KS27_1	6.10	719.26	20.42	0.10	0.50	2.55E-01	2.55E-01	3.94E-02	9.98E-05	9.98E-05	3.74E-03	3.74E-03	3.74E-03
Kane Springs Fed 10-11	KSFED10_1	6.10	719.26	20.42	0.10	0.50	2.52E-01	2.52E-01	3.97E-02	9.71E-05	9.71E-05	8.29E-04	3.68E-03	8.29E-04
Kane Springs Federal 19-1A1	KSFED19_1A	6.10	719.26	20.42	0.10	0.50	2.85E-01	2.85E-01	6.53E-02	2.85E-04	2.85E-04	6.09E-03	6.09E-03	6.09E-03
Long Canyon1	LONGC1	6.10	719.26	20.42	0.10	0.50	4.55E-01	4.55E-01	6.38E-02	1.37E-04	1.37E-04	6.17E-03	6.17E-03	6.17E-03
Moab Aggregate Plant	MOABAG	9.14	373.71	18.75	1.28	0.50	1.47E+0	1.47E+0	1.96E+0	1.88E-01	1.88E-01	8.61E-01	2.66E-01	2.66E-01

Source Description	Source ID	Stack Height (m)	Stack Temp (deg K)	Stack Velocity (m/s)	Stack Diameter (m)	NO ₂ /NO x ratio	NO _x Hourly (g/sec)	NO _x Annual (g/sec)	CO Hourly (g/sec)	SO ₂ Hourly (g/sec)	SO ₂ Annual (g/sec)	PM ₁₀ Daily (g/sec)	PM _{2.5} Daily (g/sec)	PM _{2.5} Annual (g/sec)
Salt Wash #21	SLTWSH21	6.10	719.26	20.42	0.10	0.50	1.10E-01	1.10E-01	0.00E+0	0.00E+0	0.00E+0	3.45E-03	3.45E-03	3.45E-03
Spanish Valley Aggregate & HMA Facility	SVAGG	9.14	404.82	18.38	1.52	0.50	1.67E+0	1.67E+0	1.53E+0	3.28E-01	3.28E-01	2.09E-01	6.62E-02	6.62E-02
Three Mile 12 Site1	TMILE12	6.10	719.26	20.42	0.10	0.50	2.53E-01	2.53E-01	3.61E-01	4.55E-04	4.55E-04	6.08E-03	6.08E-03	6.08E-03
Tidewater 1-31-2218	TW22181	6.10	719.26	20.42	0.10	0.50	1.10E-01	1.10E-01	0.00E+0	0.00E+0	0.00E+0	3.45E-03	3.45E-03	3.45E-03
Tidewater 17-14H- 2119	TW21191	6.10	719.26	20.42	0.10	0.50	1.10E-01	1.10E-01	0.00E+0	0.00E+0	0.00E+0	3.45E-03	3.45E-03	3.45E-03
Tidewater 21-21H- 2119	TW21191_2	6.10	719.26	20.42	0.10	0.50	1.10E-01	1.10E-01	0.00E+0	0.00E+0	0.00E+0	3.45E-03	3.45E-03	3.45E-03

1. Facilities are owned and operated by Wesco. Emissions are actual emissions from 2017 Emissions Inventory provided to UDAQ. All other cumulative facility emissions are either from existing permits with UDAQ, or if no permit was found, a conservative assumption was made based on a similar facility.

4 Near Field Modeling Methodology

To assess near field project related impacts as well as cumulative impacts within 50 km from the proposed West Fertilizer Project, the United States Environmental Protection Agency (USEPA) regulatory air dispersion model, AERMOD, was used. The most recent version of AERMOD that is available at the time that the near field modeling analysis protocol was approved was used for the near field analysis. As of June 21, 2019, the most recent version of AERMOD version is 18081. For all criteria pollutants, the AERMOD results were added to an ambient background value and compared with the NAAQS. For HAPs, the AERMOD results were compared to California RELs, NIOSH RELs, ACGIH TLVs, RfC and cancer risk thresholds, as described in Section 4.2.7. The following sections outline details of how the near field modeling analysis was completed.

4.1 Meteorological Data

Meteorological data for the AERMOD modeling system was prepared by the UDAQ using the AERMET meteorological processor, version 18081. USEPA modeling guidance recommends either five years of National Weather Service (NWS) hourly surface observations or at least one year of onsite/site-specific meteorological observations. Because onsite data was not available for the Project Area, five consecutive years of representative surface and upper air data was used. The surface data, upper air data, and AERMET input details are discussed below.

4.1.1 SURFACE AND UPPER AIR DATA

AERMOD ready meteorological data processed by UDAQ utilized five calendar years (2008 through 2012) of surface meteorological data from the Canyonlands Field Airport (KCNY), located 11 miles to the northeast of the Project Area in Grand County, Utah. This surface station is at an elevation of 1,390 m per the profile base elevation database in BEEST. Upper air data utilized in the AERMET processed data set were from the Grand Junction Regional Airport (KGJT), located 80 miles to the northeast of the Project Area in Mesa County, Colorado with Weather Bureau Army Navy (WBAN) station number 23066.

Figure 3 in the Modeling Protocol (KLF Modeling Protocol, 2019) shows a wind rose constructed from the 2008 – 2012 AERMET processed surface files. The winds at the KCNY airport are predominantly from the west and northwest. The average wind speed during 2008 through 2012 was about 3 meters per second (m/s) and calm winds were infrequent, occurring for just greater than 1 percent of hours during the five-year period.

4.1.2 AERMET Processing

Based on reviewing the processed AERMET files as well as notes from UDAQ, the following options were used in AERMET:

- Surface station raw data files were merged with 1-minute Automated Surface Observing Systems (ASOS) data;
- Airport surface characteristics were chosen; and
- The ADJ_U* option was chosen for processing stable and/or low winds.

4.2 Near Field Modeling Methodology

4.2.1 Modeling Scenarios

As discussed in Section 3 of this report, the general emission scenarios that were modeled were construction and drilling, completions, and routine operations. Because all three categories of emission generating categories could potentially be occurring at the same time over the eight-year development schedule within the Project Area, one near field modeling scenario was modeled that captures the maximum emissions from the three scenarios. Year 8 was determined to have the largest amount of emissions, as all three scenarios will be occurring at the same time. This was determined by a comprehensive 12-month emission inventory that was performed on each year of the development schedule.

Access roads were modeled so that all project-related road emission sources were captured. Only the emissions on the direct access roads were included in the model. For the construction well pads, the access road was also modeled so that access road construction emissions are captured. In general, only the emissions on the direct access unpaved roads were included in the model. Other unpaved road and all paved road emissions were not included as emissions from West Fertilizer well pad mobile sources will be very intermittent, and in most cases, mixed in with mobile sources from other non-Project vehicles. Road emissions were scaled by the length of the unpaved access road that leads to the pad. Area emission sources such as fugitives, non-road construction equipment, and wind erosion were scaled to the area of the pad to which they are located on.

Short term full receptor grid, Park Service receptor grid, and HAPs models were completed assuming two of the 15 well pads (Pads 6 and 8 in the model) were modeled with a drill rig onsite. At this time, Wesco does not plan on completing any of the wells using hydraulic fracturing. The production well pads have equipment for the maximum development of three wells on a pad. One pad (Pad 1 in the

model) was assumed to be a pad undergoing completion. Workover emissions were conservatively assumed to occur on three of the production pads (Pads 2, Pad 3, and Pad 4), with all three of the wells on each pad assumed to be worked over in the same year, and in the same hour so as to be conservative. The rest of the pads are considered to be production pads. This captures the worst-case scenario of workover emissions per pad. Figure 13 in Appendix A shows the pad numbering system used for all runs besides deposition and the NAAQS NO₂ annual.

It was assumed three of the production pads had pumping units located onsite. These pads were assumed to be the same three that have workover emissions (Pad 2, Pad 3, and Pad 4). Pumping units will not be installed on wells until the well decline requires artificial lift for production. Workover emissions were not included for the wells that did not have pumping units onsite based on the need for workovers for wells not on artificial lift per the Wesco Master Exploration Plan (MEP).

The NO₂ annual model and PSD model was run assuming six wells are drilled in a year, with the drill rig moving pads after drilling a single well. Pads 1, 5, 6, 8, 11 and 12 include drilling sources. Pads 5, 6, 8, 11 and 12 were assumed to be drilling/production pads with two wells operating when drilling was not occurring. Pad 1 is assumed to be a drilling/completion pad.

Prevention Significant Deterioration (PSD) impacts analysis models were modeled assuming that all 15 of the pads are production pads. The deposition model was run with only Project source emissions.

4.2.2 AERMOD Model Options

The control options in AERMOD were set to regulatory default settings to calculate pollutant concentrations for the NAAQS and PSD impacts analyses. Additionally, because of the rural land use types surrounding the Project Area, no urban areas were selected. Pollutant average times in the model were chosen based on the form of the NAAQS or toxic pollutant thresholds as shown in Table 4-6 and Table 4-7 below. Averaging was done in AERMOD, meaning the correct pollutant IDs was chosen to invoke averaging. For HAPs modeling, a unitized model run was conducted for a 1-hour, 24-hour, and annual averaging period for toluene, ethylbenzene, xylenes, and n-hexane and the AERMOD results scaled by the total actual emission rate for each HAP. Benzene and formaldehyde were modeled using actual maximum hourly emissions in order to demonstrate the conservative nature of the unitized run methodology. This process is discussed further below. The results in Section 5 for benzene and formaldehyde are shown for the actual emission modeled runs.

For modeling nitrogen dioxide (NO₂), the Ozone Limiting Method (OLM) was used for NO_x to NO₂ conversion. Hourly ozone data was used from the Clean Air Status and Trends Network (CASTNET) Station at Canyonlands National Park and Moab, Utah for calendar years 2008 through 2012. Section 4.3 of this report goes into further detail regarding the ambient background data used in the models.

The in-stack ratios for the OLM that were used in the 1-hour and annual NO₂ model runs are shown in Table 4-1 below. In the absence of any available data, the USEPA default value for in-stack ratios of 0.5 was used (USEPA, 2011). An equilibrium ratio of 0.9 was used for all sources.

Table 4-1

OLM IN-STACK NO₂/NO_x RATIOS

Type of Emission Source	NO ₂ /NO _x Ratio	Source of Data to Verify Ratio
Flares/Combustors	0.5	USEPA default value (USEPA, 2011)
Natural gas heaters	0.5	USEPA default value (USEPA, 2011)
Diesel drill and completion engines ¹	0.1	USEPA ISR Database (USEPA, n.d.a.) – Diesel engines larger than 1,000 kW
Diesel generator engines ¹	0.1	USEPA ISR Database (USEPA, n.d.a.) – Diesel engines smaller than 1,000 kW
Natural gas generators ¹	0.1	USEPA ISR Database (USEPA, n.d.a.) – Natural gas engines between 145 and 175-hp
Natural gas pumping units ¹	0.1	USEPA ISR Database (USEPA, n.d.a.) – Natural gas engines smaller than 100-hp
On-road mobile sources	0.15	Ranges of NO ₂ /NO _x ratios obtained from – P G Boulter, I S McCrae, and J Green, Transportation Research Laboratory, “Primary NO ₂ Emissions from Road Vehicles in the Hatfield and Bell Commons Tunnels”, July 2007
Nonroad mobile sources	0.2	USA EPA Database for Diesel-field RICE in Construction Services – 250-hp Caterpillar C7 and 365-hp Caterpillar D343
Cumulative Sources	0.5	USEPA default value (USEPA, 2011)

4.2.3 Modeling Parameters for Emission Sources

The layout of each facility was based on discussions with the operator and layouts of existing facilities and can be seen in Figures 4 through 9 in Appendix A. Emission points from Project sources were modeled as point, area, and volume sources along the pads and roads, depending on the source type. Stacks were merged

if sources had similar source parameters or were the same unit (i.e., combustor) used for the same purpose (i.e., controlling storage tanks).

Also because of the uncertainty of facility layout, buildings were not included in the near field modeling scenarios. Typically, well pads with small engines, heaters, and storage tanks do not have buildings that would affect flow and dispersion from emission stacks. Thus, downwash was not considered in the near field model.

Fugitive emission sources such as construction dust were modeled as area or volume sources, depending on what is most appropriate. Road emissions such as drilling tailpipe and on-road emissions were modeled as volume sources that were placed along the length of the pad unpaved access road. Fugitive emissions from pneumatics, truck loading, and component leaks were modeled as area sources that were scaled to the size of the pad. Release heights, initial vertical dimensions, and initial horizontal dimensions were based on the equipment the volume source is representing as well as Table 3-2 from the AERMOD guidance (USEPA, 2018a).

Maximum hourly or average annual emission rates were used depending on the ambient air threshold for the pollutant of interest, except for the completions tank source for benzene on the refined grid run. For example, 1-hour NO₂ was modeled using maximum hourly potential emissions as calculated in the reviewed emissions inventory by the Air Quality Working Group for the Project finalized on April 19, 2019 (KLF Air Emissions Inventory, 2019). The 1-hour and annual NO₂ runs and deposition were updated based on edits recommended in the June 2019 response to comments. Source parameters for the drill rig were updated according to EPA comments during the final review process for annual NO₂, deposition, and the NO₂ 1-hour run. The NO₂ 1-hour model run was the scenario that was closest to the NAAQS standard and had the highest impacts from drilling, so the drill rig source parameters were updated to estimate potential worst-case impacts. Most emission sources were assumed to operate 24 hours per day, seven days per week, and 52 weeks per year unless equipment is operated for a limited amount of time. For example, workover engines only operate 10 hours a day for 5 hours per workover, so emissions were calculated on a tons per workover basis. The annual emissions per pad were determined by multiplying the tons per workover by the total number of workovers per pad that occur in the year.

Fugitive and mobile sources along access roads such as construction dust or tailpipe emissions were modeled as volume source. The gravel access roads were modeled as a series of volume sources to represent dust or tailpipe emissions from vehicle traffic. Nonroad tailpipe emissions or fugitive dust on any of the

pads or access facilities were modeled as area sources covering all acreage for each pad. Release heights, initial vertical dimensions, and initial horizontal dimensions were based on the equipment (i.e., truck) the volume source is representing as well as Table 3-2 from the AERMOD guidance (USEPA, 2018). The modeling parameters for all project sources are included in Tables 4-2 through 4-5. Cumulative source modeling parameters were presented in Table 3-6.

The exact UTM coordinates are not included in the subsequent tables, however Figures 4 through 9 in Appendix A show the emission source location relative to the pad boundary for each scenario.

Table 4-2
CONSTRUCTION/DRILLING PAD SOURCE MODEL PARAMETERS

Source Description	Source ID	Source Type	Stack Height (m)	Stack Temp (deg K)	Stack Velocity (m/s)	Stack Diameter (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)
Gravel Roads and Pad Construction - Nonroad Tailpipe - Pad Construction Fugitive Dust - Pad	PADNR	Area Source	-	-	-	-	3.89	-	1.06
Gravel Roads and Pad Construction - Nonroad Tailpipe – Road Gravel Roads and Pad Construction - Nonroad Tailpipe - Road Construction Fugitive Dust – Road/Gathering Line Construction Truck Tailpipe Interim Reclamation Truck Tailpipe, Construction Traffic Dust	GRVLNRD	Series of Volume Sources	-	-	-	-	3.89	7.09	3.61
Drill Rig Engines	DRENG	Point	4.57	671	27	0.36	-	-	-
Drill Rig Generators	DRLGEN	Point	4.57	755	30	0.064	-	-	-
Drill Rig Gas Venting	DRLFLR	Area Source	-	-	-	-	3.89	-	1.06
Drilling On-road Tailpipe and Traffic Dust	DRLTP	Series of Volume Sources	-	-	-	-	3.89	6.24	3.61

1) Drill rig engines and generator stack parameters were updated in all annual and hourly NO₂ runs per EPA comments, as shown in Table 4-5. The remainder of the runs utilize the stack parameters from the Modeling Protocol.

Table 4-3
COMPLETION PAD SOURCE MODEL PARAMETERS

Source Description	Source ID	Source Type	Stack Height (m)	Stack Temp (deg K)	Stack Velocity (m/s)	Stack Diameter (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)
Completion Pit Flares	CMPFLR	Point	7.62	1,273	2	0.61	-	-	-
Completion Testing Tanks	CMPTNK	Point	8.23	350	0.50	0.10	-	-	-
Wind Erosion	WIND	Area Source	-	-	-	-	3.89	-	1.06
Completion Tailpipe	CMPTP	Series of Volume Sources	-	-	-	-	3.89	6.24	3.61

Table 4-4
PRODUCTION/WORKOVER PAD SOURCE MODEL PARAMETERS

Source Description	Source ID	Source Type	Stack Height (m)	Stack Temperature (deg K)	Stack Velocity (m/s)	Stack Diameter (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)
Well Pumping Units	OPSPU	Point	6.10	719	20.4	0.10	-	-	-
Well Generators	OPSGEN	Point	3.66	653	16.0	0.10	-	-	-
Well Heaters	OPSHEAT	Point	7.62	366	6.10	0.30	-	-	-
Well Tank Combustors	OPSCOMB	Point	7.62	1366	0.46	1.22	-	-	-
Workover Flares	WRKFLR	Point	7.62	1273	2.00	0.61	-	-	-
Workover Engines	WRKENG	Point	6.10	800	30	0.30	-	-	-
Workover Generators	WRKGEN	Point	6.10	755	27	0.30	-	-	-
Operations Wind Erosion Dust	OPSPFD	Area Source	-	-	-	-	3.89	-	1.06
Well Fugitive Leak, Loading, and Pneumatic Controllers	OPSFUG	Area Source	-	-	-	-	1.52	-	1.06
Operations Fugitive Road Sources	OPSVOL	Series of Volume Sources	-	-	-	-	3.89	6.24	3.61

Table 4-5
DRILLING SOURCE MODEL PARAMETERS FOR 1-HOUR NO2 AND ANNUAL MODEL RUNS

Source Description	Source ID	Source Type	Stack Height (m)	Stack Temperature (deg K)	Stack Velocity (m/s)	Stack Diameter (m)	Release Height (m)	Horizontal Dimension (m)	Vertical Dimension (m)
Drill Rig Engines	DRENG	Point	4.57	671	27	0.36	-	-	-
Drill Rig Generators	DRLGEN	Point	4.57	755	30	0.06	-	-	-

4.2.4 Criteria Pollutants

As shown in Tables 3-1 through 3-4 and in Appendix B, project specific emissions of CO, NO_x, SO₂, PM₁₀, and PM_{2.5} were calculated for the modeled scenarios. The relevant air quality standards are shown in Table 4-6 and 4-7 along with average times. Each pollutant and average time were modeled in the near field modeling. Ambient background values of each criteria pollutant, listed in Table 4-12, were included in the AERMOD run. The total impact was then compared to the NAAQS and the results are detailed in Section 5 of this report. Table 4-6 shows the form of the NAAQS standards used in the analysis.

Dispersion models, such as AERMOD, only treat inert pollutants and do not treat chemically formed pollutants, such as Ozone and secondary PM_{2.5}. Therefore, EPA's MERPs approach will be used to determine ozone and secondary PM_{2.5} impacts in Section 5.4. Due to low emissions, lead was also not modeled though both a federal and state air quality standard exist. AP-42 does not have published emission factors for lead from natural gas engines, diesel engines or heaters. These pollutants are all discussed further in Section 5.

**Table 4-6
NAAQS VALUES**

Pollutant	Average Time	NAAQS¹	Form of the Standard
CO	1-hour	35 ppm (40,000 µg/m ³)	Not to be exceeded more than once per year
CO	8-hour	9 ppm (10,000 µg/m ³)	Not to be exceeded more than once per year
NO ₂	1-hour	100 ppb (188 µg/m ³)	98 th percentile of the daily maximum 1 hour averaged over three years
NO ₂	Annual	53 ppb (100 µg/m ³)	Annual mean
SO ₂	1-hour	75 ppb (196 µg/m ³)	99 th percentile of the daily maximum 1 hour averaged over three years
SO ₂	3-hour	0.5 ppm (1,300 µg/m ³)	Not to be exceeded more than once per year
PM ₁₀	24-hour	150 µg/m ³	Not to be exceeded more than once per year on average over three years
PM _{2.5}	24-hour	35 µg/m ³	98 th percentile averaged over three years
PM _{2.5}	Annual	12 µg/m ³	Annual mean averaged over three years

1. Referenced from 40 CFR Part 50

PSD increments are also used for a comparison to air quality impacts from a project. A list of PSD increments for Class I areas is shown below in Table 4-7. Since West Fertilizer is not a major source that would trigger PSD permitting or review, a formal PSD increment consumption analysis was not conducted. Air quality impacts from the West Fertilizer Project on the nearby Class I areas were compared to PSD increments so as to inform state and federal agencies of the potential for increment consumption. This comparison was completed by running the near field modeling scenario that was discussed in Section 4.2.1, but only included the West Fertilizer Project operations (i.e., permanent) emission sources as well as only the receptors in the two Class I areas that will be discussed in Section 4.2.8.

Table 4-7
PSD INCREMENTS FOR CLASS I AREAS

Pollutant	Average Time	Class 1 PSD Increment¹
NO ₂	Annual	2.5 µg/m ³
SO ₂	3-hour	25 µg/m ³
SO ₂	24-hour	5 µg/m ³
SO ₂	Annual	2 µg/m ³
PM ₁₀	24-hour	8 µg/m ³
PM ₁₀	Annual	4 µg/m ³
PM _{2.5}	24-hour	2 µg/m ³
PM _{2.5}	Annual	1 µg/m ³

1. Referenced from 40 CFR Part 52 Subpart A

Visibility

VISCREEN was used to calculate estimates of changes in visibility at the two Class I areas. The changes in visibility were determined by the change in color difference index (ΔE) and plume contrast (C). The VISCREEN hourly estimates were compared to the ΔE threshold of 2.0, and the absolute value of C threshold of 0.05 (FLAG, 2010). VISCREEN was modeled for three (3) emission scenarios: construction, drilling, and routine operations using the maximum hourly emissions of each scenario.

A Level 2 VISCREEN analysis was performed. Inputs to the VISCREEN model followed guidance from the FLAG 2010 document Section 3.3 and the USEPA guidance for plume and visual impact screening (USEPA 1992b). As such the following input settings were chosen:

- NO_x and PM emissions input are from the single West Fertilizer pad nearest to each of the Class I areas from a single stack;
- Primary NO₂ emission rates were calculated using the NO₂/NO_x ratios described in Table 4-1;

- Emission rate for soot were determined from particulates from diesel engines following NPS guidance (Wenli Yang, P. (n.d.)).
- Default (zero) emission rate was used for primary sulfate;
- Background visual range for each of the two Class I areas were referenced from Table 10 of the FLAG 2010 document;
- Default particle size and densities were implemented; and
- Worst-case meteorological conditions were estimated using the 1-percent meteorology from wind data from the Canyonlands Airport for years 2014 through 2018.
- When analyzing wind data, the F stability class was not considered because this stability class only occurs at night with little to no wind, which is not likely. The E stability class only occurs during at night and was not considered in the daytime analysis. The stability class and wind speed classifications from Table 3 of the VISCREEN User's Manual were used to analyze the wind speed data. The wind speed analyzed for each time of day was based on the resultant wind rose vector that had the most percentages of wind speeds that pointed directly at the Class 1 Area during each 6-hour increment.

Inputs to the model are shown in Tables 4-8 and 4-9 below.

Table 4-8

VISCREEN INPUTS FOR CONSTRUCTION, DRILLING, AND ROUTINE OPERATIONS – ARCHES NATIONAL PARK

Scenario	PM (lb/hr)	NO _x (lb/hr)	Soot (lb/hr)	NO ₂ (lb/hr)	Nearest Receptor ² (km)	Farthest Receptor (km)	Background Visual Range (km)	Ozone Background (ppm)	Wind Speed (m/s)	Stability Class Index	Plume offset angle (°)
Construction	1.24	0.34	0.011	0.0039	12.95	29.57	274.25	0.064	2	E	11.25
Drilling	1.46	20.51	0.13	2.05	12.95	29.57	274.25	0.064	2	E	11.25
Routine Operations	0.21	2.04	0.0039	0.56	12.95	29.57	274.25	0.064	2	E	11.25

1. Emissions are shown on a single pad basis.
2. Pad 10 is the closest pad to Arches National Park.

Table 4-9

VISCREEN INPUTS FOR CONSTRUCTION, DRILLING AND COMPLETIONS, AND ROUTINE OPERATIONS – CANYONLANDS NATIONAL PARK

Scenario	PM (lb/hr)	NO _x (lb/hr)	Soot (lb/hr)	NO ₂ (lb/hr)	Nearest Receptor ² (km)	Farthest Receptor (km)	Background Visual Range (km)	Ozone Background (ppm)	Wind Speed (m/s)	Stability Class Index	Plume offset angle (°)
Construction	1.24	0.34	0.011	0.0039	12.76	69.93	259.58	0.064	4	E	99
Drilling	1.46	20.51	0.13	2.05	12.76	69.93	259.58	0.064	4	E	99
Routine Operations	0.21	2.04	0.0039	0.56	12.76	69.93	259.58	0.064	4	E	99

1. Emissions are shown on a single pad basis.
2. Pad 15 is the closest pad to Canyonlands National Park.

Deposition Modeling

To determine whether the West Fertilizer Project will result in an impact due to nitrogen and sulfur deposition, the Federal Land Managers' (FLM) Interagency Guidance for Near Field Deposition Modeling (FLM, 2014) was followed. A Level 1 analysis was first completed and found to be too conservative in the assumptions. Next, a Level 2 Analysis was completed to show deposition impacts from the West Fertilizer Project. The modeling scenario used for the NAAQS evaluation was used for the deposition analysis. The maximum emissions year (Year 8) was used in to determine impacts from deposition.

In the Level 1 analysis, the methodology below was followed:

- The AERMOD control file contained the options: Dry Deposition Only (DDEP), Annual Averaging Period (A), and Dry Deposition Velocity (GASDEPVD) of 0.05 for NO₂ and 0.0005 for SO₂
- The dry deposition flux for NO₂, was multiplied by the ratio of molecular weight of NO₂ and HNO₃ (i.e., 63/46) for HNO₃ flux in grams per squared meter (g/m²)
- The results were converted from micrograms per squared meter (ug/m²) to kilogram per hectare (kg/ha) using the factors in Table 1 of the FLM Interagency Guidance for Near Field Deposition Modeling

In the Level 2 analysis, the methodology below was followed:

- The following AERMOD control file options were chosen: Dry Deposition Only (DDEP), Annual Averaging Period (A), GDSEASON and GDLANDUSE values will be chosen per AERMOD's User's Guide, and DEPOS using the values in Table 2 of the FLM Interagency Guidance for Near Field Deposition Modeling.
- Only project emissions were modeled.
- The dry deposition flux for NO₂, was multiplied by the ratio of molecular weight of NO₂ and HNO₃ (i.e., 63/46) for HNO₃ flux in grams per meter squared (g/m²).
- The results were converted from micrograms per meter squared (μg/m²) to kilogram per hectare (kg/ha) using the factors in Table 1 of the FLM Interagency Guidance for Near Field Deposition Modeling.

The annual results in kg/ha were then compared to local deposition trends at Canyonlands National park along with the Deposition Analysis Thresholds (DAT) of 0.005 kilograms per hectare per year (kg/ha/yr)

for sulfur and 0.005 kg/ha/yr for nitrogen (FLAG, 2010) and the Critical Load Thresholds as discussed in Section 5.8 of this report.

4.2.7 HAPs Modeling

Emissions were calculated for benzene, toluene, ethylbenzene, xylenes, n-hexane, and formaldehyde. Hydrogen sulfide (H₂S) will not constitute a meaningful portion of the gas streams, so it was not assessed. Since there are no applicable federal ambient air quality standards for HAPs, Reference Concentrations for chronic inhalation (RfC) exposure and Reference Exposure Levels (REL) for acute inhalation exposures were used as evaluation criteria. The RfCs represent an estimate of the continuous inhalation exposure rate to the human population without adverse health effects. The RELs represent the acute concentration at or below which no adverse health effects to humans are expected. Both the RfC and REL guideline values are for non-cancer effects.

Additionally, State of Utah has adopted Toxic Screening Levels (TSLs) which are used during the air permitting process (UDAQ n.d.). The TSLs are derived from TLVs published in the ACGIH – “Threshold Limit Values for Chemical Substances and Physical Agents”. These levels are not standards that must be met, but screening thresholds which if exceeded, would suggest that additional information is needed to evaluate potential health and environmental impacts. The TSLs were compared against modeled concentrations.

Table 4-10 shows the RELs, RfCs, and TSLs for each HAP that were included in the near field modeling assessment. Each HAP was modeled for a 1-hour average time to compare to the REL and 1-hour TSL, a 24-hour average time to compare to the 24-hour TSLs, and an annual average time to compare to the RfC. No ambient air background levels were added to the HAP model results. The modeling scenario for HAPs was the same as for criteria pollutants, using the maximum emissions year (Year 8). Toluene, ethylbenzene, xylene and n-hexane were modeled using a model run with unitized emissions and then scaled to the model results by the calculated potential emissions. This method is conservative because it assumes that the same emission rate comes from each source and, therefore, affects the receptors equally. A more refined model run was required for benzene, and that run is detailed further in Section 5.3.

Cancer inhalation risk was calculated by multiplying the annual model result by the IUR shown in Table 4-10 along with an exposure adjustment factor. Two exposure scenarios will be considered, the maximum exposed individual (MEI) and the most likely exposure (MLE). For the MEI risk, it is assumed that a person

is exposed continuously (24 hours per day, 365 days per year) for the life of the project (30 years). For the MLE risk, an adjustment was made for the amount of time a person stays at a residence. No adjustment will be made for time away from home, to conservatively assume that people who live near the Project Area also work nearby. A typical residence time at the same location for a residential receptor can be from 6 to 30 years (USEPA, 2009), so a midrange of 18 years was used for the average residential exposure. Exposure adjustment factors of 0.43 for the MEI (30/70) and 0.26 for the MLE (18/70) were applied to the estimated cancer risk to account for the actual time that an individual could be exposed during a 70-year lifetime.

**Table 4-10
ACUTE, CHRONIC, AND CANCER RISK THRESHOLDS FOR HAPs**

Pollutant	Acute RELs ($\mu\text{g}/\text{m}^3$)¹	TSLs ($\mu\text{g}/\text{m}^3$)³	Non-cancer Chronic RfC ($\mu\text{g}/\text{m}^3$)²	IUR ($1/(\mu\text{g}/\text{m}^3)$)²
Benzene	27	18	30	7.8E-06
Toluene	37,000	2,512	5,000	N/A
Ethylbenzene	22,000 ⁴	2,895	1,000	2.5E-06
Xylenes	8,700 ⁴	14,473	100	N/A
n-Hexane	180,000 ⁵	180,000 ⁵	700	N/A
Formaldehyde ⁶	55	37	9.8	1.3E-05

1. Values referenced from USEPA, 2018c.
2. Values referenced from USEPA, 2018b.
3. Values referenced from UDAQ n.d. All TSLs are for a 24-hour average except formaldehyde which is for a 1-hour average.
4. Values referenced from ATSDR.
5. Values referenced from NIOSH REL and ACGIH TLV.
6. There is no RfC for formaldehyde. The ATSDR chronic MRL of 0.008 ppm was used and converted to $\mu\text{g}/\text{m}^3$.

4.2.8 Receptors

To capture West Fertilizer Project impacts as well as cumulative source impacts, a two-step approach was taken to create the receptor grids. The first step was to place a coarse grid of receptors over the model area and the second step refined those areas that showed areas of exceedances or those areas with a steep concentration gradient. All receptors are in the UTM NAD83 Zone 12N coordinate system.

In the first step, a rectangular grid was placed over the entire 50 km surrounding the Project Area with grid spacing of 1,000 meters. In the second step, a refined grid with 25 meter spacing on the fenceline, and then 50 meter spacing out to 200 meters, and then 100 meter spacing out to 500 meters was created around the pad nearest the receptor that showed the concentration of 90% or greater of the applicable threshold. This two-step approach allowed for all areas of impacts to be identified without the receptor grid becoming too large. A refined 100-meter spacing grid was used for 1-hour NO₂ and benzene for the NAAQS model, as is discussed further in Section 5. The refined grids for each pollutant are shown in Figures 16 and 18 in Appendix A.

The following coordinates, which were located on the 1,000-meter spaced grid surrounding the Project Area, were not included in the model for the reasons stated below:

- 596710, 4276515 – Receptor is located on access road.
- 600710, 4272515 – Receptor is located on a production pad.
- 591710, 4277515 – Receptor is located on a production pad.
- 600710, 4272515 – Receptor is located on a production pad.

A separate receptor grid was utilized to determine the criteria and hazardous air pollutant impacts, and potential increment consumption in the Class I areas. Receptors were placed inside both Arches National Park and Canyonlands National Park according to available datasets downloaded from the National Park Service (NPS) (<https://irma.nps.gov/DataStore/Reference/Profile/2249830>). Additional 250 meter-spaced special receptors were placed along the northern boundary of Canyonlands National Park and the Western boundary of Arches out to 1 km. Figures of the course rectangular grid and the NPS special receptors are included in Appendix A, as Figures 11 through 14.

The receptor grid for the deposition model was created based on the datasets downloaded from the NPS (<https://irma.nps.gov/DataStore/Reference/Profile/2249830>) for both Arches National Park and Canyonlands National Park.

4.2.9 Terrain Elevations

Terrain elevations for emission sources, receptors, and hill height receptors within the modeling domain were determined by AERMAP (version 18081) processed with National Elevation Dataset (NED) files prepared by the United States Geologic Survey (USGS). The NED files were downloaded from the

National Map website (<https://viewer.nationalmap.gov/basic/>) in a 1 arc- second ArcGrid format. The ArcGrid files were converted to GeoTIFF format. The NED data are based on UTM NAD83.

4.2.10 Downwash

Buildings were not included in the facility layout for the pads. Typically, well pads with small engines, heaters, and storage tanks do not have buildings that would affect flow and dispersion from emission stacks. Thus, downwash was not considered in the near field model. This analysis is focused on the impacts of the Project Area with multiple facilities in operation, and not a specific emission source layout, so the approximations made are warranted and conservative in many cases.

4.3 Ambient Background Data

The ambient air monitoring stations closest to the Project Area are the CASTNET Station at Canyonlands National Park and Moab, Utah. However, the CASTNET Station does not collect any criteria pollutant data other than ozone, and the station at Moab only collected PM₁₀ up to 2003. Therefore, other stations nearby were analyzed for criteria pollutant data. Table 4-11 lists the coordinates of each of the monitoring stations reviewed in detail, the three most recent years of data, and the location in relation to the Project Area.

Table 4-11

AMBIENT AIR MONITORING STATIONS NEAR THE PROJECT AREA

Name of Monitoring Station	UTM NAD83 Zone 12 Easting (meters)	UTM NAD83 Zone 12 Northing (meters)	Most Recent Three Years of Data¹	Distance and Direction from Project Area	Pollutants Monitored
Canyonlands CASTNET 49-037-0101	4,257,327	602,844	2015-2017	13 miles south	Ozone
Price, Utah 49-007-1003	4,384,487	517,104	2015-2017	84 miles northwest	NO ₂ , Ozone
Grand Junction 08-077-0018	4,326,741	710,972	2015-2017	77 miles northeast	CO
Grand Junction 08-077-0017	4,326,687	711,006	2015-2017	77 miles northeast	PM ₁₀ , PM _{2.5}
Moab 049-019-0006	4,271,189	625,878	2000-2002 ²	19 miles east	PM ₁₀
Shiprock, NM 35-045-1233	4,075,952	705,602	2015-2017	140 miles southeast	SO ₂
Rock Springs, WY 56-037-0300	4,622,791	600,739	2015-2017	220 miles north	SO ₂

1. 2018 data are available but will not be used because at the time of this report it has not been quality reviewed and approved by the USEPA.
2. 2003 is the last year data are available from the Moab station; however, 2003 is mostly incomplete so 2000-2002 was analyzed.

When multiple monitoring stations that were reviewed collected data for the same pollutant, a decision was made on which station was more representative. For ozone, the CASTNET station was chosen because of the close proximity to the Project Area. The Grand Junction station was chosen for PM₁₀ because the data are more recent and PM_{2.5} is also collected from that station. Of note, the Moab station and the Grand Junction station had the same three year high second high value of PM₁₀, so the Grand Junction station appears representative of the Project Area. Lastly, SO₂ was taken from the Shiprock, NM station because it is closer to the Project Area and the Rock Springs, WY station is near industry emission sources that are not representative of the Project Area.

Monthly average NO₂ background values for 2016 through 2018 were received from the UDAQ on August 29, 2019. These monthly values were input to the NAAQS and Park Service receptor grid models for the 1-hour and annual NAAQS models. These values can be seen in Table 4-13. For all other pollutants and average times, a single background value was added to the model results. Table 4-12 lists the background values used in the model runs.

Table 4-12
MONITORING STATION BACKGROUND DATA SUMMARY

Pollutant	Average Time	Monitor Name	2015	2016	2017	Final Value	Data Value
CO	1-hour	Grand Junction 08-077-0018	1.4 ppm	1.8 ppm	1.2 ppm	1.8 ppm (2100 µg/m ³)	Maximum second high value from three years of data
CO	8-hour	Grand Junction 08-077-0018	0.9 ppm	1.0 ppm	0.9 ppm	1.0 ppm (1100 µg/m ³)	Maximum second high value from three years of data
SO ₂	1-hour	Shiprock, NM 35-045-1233	9 ppb	7 ppb	7 ppb	8 ppb (20 µg/m ³)	99 th percentile averaged over three years
SO ₂	3-hour	Shiprock, NM 35-045-1233	6.0 ppb	4.7 ppb	5.4 ppb	6.0 ppb (15.7 µg/m ³)	Maximum second high value from three years of data
PM ₁₀	24-hour	Grand Junction 08-077-0017	34 µg/m ³	35 µg/m ³	44 µg/m ³	44 µg/m ³	Maximum second high value from three years of data
PM _{2.5}	24-hour	Grand Junction 08-077-0017	21 µg/m ³	21 µg/m ³	16 µg/m ³	19 µg/m ³	98 th percentile averaged over three years
PM _{2.5}	Annual	Grand Junction 08-077-0017	6.8 µg/m ³	6.4 µg/m ³	5.7 µg/m ³	6.3 µg/m ³	Annual mean averaged over three years
Ozone	8-hour	Canyonlands CASTNET 49-037-0101	0.065 ppm	0.064 ppm	0.064 ppm	0.064 ppm	Fourth high daily maximum averaged over three years

1. Data referenced from USEPA, n.d.b.

2.

Table 4-13
NO₂ Monthly Background Concentrations

Month	2016 (ppb)	2017 (ppb)	2018 (ppb)	Average (ppb)
January	23	26	15	21.3
February	6	19	9	11.3
March	9	18	11	12.7
April	11	17	11	13.0
May	9	7	6	7.3
June	Not Available	8	11	9.5
July	Not Available	6	17	11.5
August	11	7	13	10.3
September	11	10	11	10.7
October	12	6	12	10.0
November	11	Not Available	14	12.5
December	Not Available	16	26	21.0

5 Near Field Air Quality Impact Analysis Results

The results from the near field modeling are detailed below. All modeling was conducted per the detailed methodology, emission rates, input parameters, and source factors detailed in Chapters 3 and 4. The AERMOD output files are included in the attachments to this report.

5.1 Criteria Pollutants

The results of the near-field analysis for criteria pollutants for of the West Fertilizer project showed the maximum potential impacts receptor (the location where the maximum pollutant concentration occurred compared to the standard) are less than the NAAQS for all standards as listed in Tables 5-1 through 5-2 for the modeling scenario described in 4.2.1. Most of the maximum impacts are located southeast of the project sources, next to cumulative sources that are not associated with the Project. Table 5-3 shows the maximum impacts from the West Fertilizer Project sources and cumulative sources within the Class I Areas. The maximum impact receptor for each pollutant and averaging period differed. Source groups were created in each of the models to determine the contribution of modeled concentrations from the West Fertilizer Project versus cumulative sources. The largest contribution was found to be for NO₂ 1-hour on the northern side of the Pad 8 fenceline, a drilling/production pad. Note that the background values were included with the model and are included as part of the output concentration in the modelling summary files.

All three activities (construction/drilling, completions, and production/workovers) were modeled together, and emissions were modeled for Year 8 of the project. For all modeling averaging periods and pollutants except annual NO₂, three pads were assumed to be production pads with workovers, nine pads were assumed to be only production pads, two pads were assumed to be construction/drilling pads, and one pad was assumed to be a completion pad. Because six wells could be drilled in a single year, the annual NO₂ model runs had additional sources added to include five drilling/production pads and one drilling/completion pad. Pads 6 and 8 had sources for two producing wells included, to represent the annual emissions of the two pads. Pads 5, 11, and 12 had drilling emissions added, with the assumption that there will be two producing wells operating when the drilling activities were not occurring. Pumping units and workover emissions were not included in the production sources, as it is assumed that these wells will not have required workovers since the wells were just drilled. Pad 1 also had drilling sources added to the modeled completions activities emissions. Construction emissions were not included in the hourly runs because construction and drilling will not occur in the same hour and drilling operations account for the maximum hourly emissions for all pollutants. The remainder of the annual runs were not updated based on

the initial results from the draft modeling report, which showed the impacts are less than 60% of the pollutant's respective NAAQS standard. Two producing wells were added to each drilling pad (Pad 6 and Pad 8) and one drilling well was added to 3 production pads (5, 11, and 12) and one drilling well was added to the completion pad (1). Annual emissions for the original drilling pads increased by 18% from the draft modeling report and annual emissions for the production pads increased by 19% from the draft modeling report. Annual PM_{2.5} emissions from the drilling pads are about 10% of the annual NO₂ emissions. By linearly applying the change in results from the draft modeling report and final modeling report for annual NO₂ to the draft modeling report result for annual PM_{2.5}, it can be inferred that increasing the PM_{2.5} emissions by one production pad and 4 drilling pads would not cause any exceedances in the annual PM_{2.5} run,

Per EPA comments, the stack parameters of the drill rig engines and drill rig generators were updated in the 1-hour NO₂ and annual NO₂ runs and deposition.

Table 5-1

**WEST FERTILIZER CRITERIA POLLUTANT RESULTS
FULL RECEPTOR GRID WITH CUMULATIVE SOURCES**

Pollutant	Average Time	Rank	Background Concentration	2008 Modeled Result ($\mu\text{g}/\text{m}^3$)	2009 Modeled Result ($\mu\text{g}/\text{m}^3$)	2010 Modeled Result ($\mu\text{g}/\text{m}^3$)	2011 Modeled Result ($\mu\text{g}/\text{m}^3$)	2012 Modeled Result ($\mu\text{g}/\text{m}^3$)	Maximum Meteorological Year	Value Compared to Standard ($\mu\text{g}/\text{m}^3$)	NAAQS ($\mu\text{g}/\text{m}^3$)	% of Standard
CO	1-hour	H2H	2,100 $\mu\text{g}/\text{m}^3$	280.10	282.14	283.08	280.61	280.04	2010	2,393	40,000 $\mu\text{g}/\text{m}^3$	6%
CO	8-hour	H2H	1,100 $\mu\text{g}/\text{m}^3$	98.47	113.26	98.85	87.07	98.82	2009	1,213	10,000 $\mu\text{g}/\text{m}^3$	12%
NO ₂	1-hour	98 th	Monthly (see Table 4-13)	176.60	175.90	180.76	174.66	176.58	2010	176.90	188 $\mu\text{g}/\text{m}^3$	94%
NO ₂	Annual	Max	Monthly (see Table 4-13)	28.66	30.94	30.33	30.32	31.08	2012	31.08	100	31%
SO ₂	1-hour	99 th	20 $\mu\text{g}/\text{m}^3$	33.77	32.99	34.07	33.88	33.91	2010	33.72	196	17%
SO ₂	3-hour	H2H	15.7 $\mu\text{g}/\text{m}^3$	22.40	21.98	22.15	22.14	22.54	2012	22.54	1,300	2%
PM ₁₀	24-hour	H6H	44 $\mu\text{g}/\text{m}^3$	N/A	N/A	N/A	N/A	N/A	N/A	54.70	150	36%
PM _{2.5}	24-hour	98 th	19 $\mu\text{g}/\text{m}^3$	20.50	20.93	20.72	20.65	20.77	2009	20.71	35	59%
PM _{2.5}	Annual	H1H	6.3 $\mu\text{g}/\text{m}^3$	6.83	6.84	6.87	6.89	6.94	2012	6.87	12	57%

- 1) NO₂ 1-hour results are based on the refined grid model discussed below.
- 2) Background values are included in the model runs for all pollutants except CO.
- 3) PM₁₀ 24-hour model is run as an average of the modeled years due to the form of the standard.

Table 5-2

**WEST FERTILIZER CRITERIA POLLUTANT RESULTS
MAXIMUM PROJECT IMPACTS FROM FULL RECEPTOR GRID WITHOUT CUMULATIVE SOURCES**

Pollutant	Average Time	Rank	Background Concentration	2008 Modeled Result ($\mu\text{g}/\text{m}^3$)	2009 Modeled Result ($\mu\text{g}/\text{m}^3$)	2010 Modeled Result ($\mu\text{g}/\text{m}^3$)	2011 Modeled Result ($\mu\text{g}/\text{m}^3$)	2012 Modeled Result ($\mu\text{g}/\text{m}^3$)	Maximum Meteorological Year	Value Compared to Standard ($\mu\text{g}/\text{m}^3$)	NAAQS ($\mu\text{g}/\text{m}^3$)	% of Standard
CO	1-hour	H2H	2,100 $\mu\text{g}/\text{m}^3$	161.63	158.28	154.29	155.56	154.76	2008	2,261	40,000	6%
CO	8-hour	H2H	1,100 $\mu\text{g}/\text{m}^3$	98.46	99.66	98.85	87.06	92.07	2009	1,199	10,000	12%
NO ₂	1-hour	98 th	Monthly (see Table 4-13)	176.59	175.90	180.76	174.66	176.58	2010	176.90	188	94%
NO ₂	Annual	Max	Monthly (see Table 4-13)	25.78	27.47	27.57	27.49	27.97	2012	27.97	100	28%
SO ₂	1-hour	99 th	20 $\mu\text{g}/\text{m}^3$	22.27	22.30	22.31	22.33	22.30	2011	22.30	196	11%
SO ₂	3-hour	H2H	15.7 $\mu\text{g}/\text{m}^3$	16.80	16.88	16.84	16.91	16.81	2011	16.92	1,300	1%
PM ₁₀	24-hour	H6H	44 $\mu\text{g}/\text{m}^3$	N/A	N/A	N/A	N/A	N/A	N/A	54.69	150	36%
PM _{2.5}	24-hour	98 th	19 $\mu\text{g}/\text{m}^3$	20.50	20.93	20.72	20.65	20.77	2012	20.71	35	59%
PM _{2.5}	Annual	H1H	6.3 $\mu\text{g}/\text{m}^3$	6.82	6.84	6.86	6.88	6.94	2012	6.87	12	57%

- 1) Background values are included in the model runs for all pollutants except CO.
- 2) Please note that the maximum project impacts are not necessary located at the same receptor as the total impacts in Table 5-1. The total impacts from Table 5-1 typically occur near the cumulative sources.
- 3) PM₁₀ 24-hour model is run as an average of the modeled years due to the form of the standard.

Table 5-3
WEST FERTILIZER CRITERIA POLLUTANT RESULTS
PARK SERVICE RECEPTORS

Pollutant	Average Time	Rank	Background Concentration	2008 Modeled Result (µg/m ³)	2009 Modeled Result (µg/m ³)	2010 Modeled Result (µg/m ³)	2011 Modeled Result (µg/m ³)	2012 Modeled Result (µg/m ³)	Maximum Meteorological Year	Total (µg/m ³)	NAAQS (µg/m ³)	% of Standard
CO	1-hour	H2H	2,100 µg/m ³	134.80	137.91	123.89	137.36	124.63	2009	2,237.91	40,000 µg/m ³	6%
CO	8-hour	H2H	1,100 µg/m ³	32.31	28.45	26.96	27.17	22.07	2008	1,132.31	10,000 µg/m ³	11%
NO ₂	1-hour	98 th	Monthly (see Table 4-13)	136.89	121.20	135.64	153.78	120.16	2011	133.54	188 µg/m ³	71%
NO ₂	Annual	Max	Monthly (see Table 4-13)	11.87	11.95	11.91	12.00	11.91	2011	12.00	100 µg/m ³	12%
SO ₂	1-hour	99 th	20 µg/m ³	22.11	21.93	21.90	22.02	21.82	2008	21.96	196 µg/m ³	11%
SO ₂	3-hour	H2H	15.7 µg/m ³	16.16	16.13	16.14	16.11	16.08	2008	16.16	1,300 µg/m ³	1%
PM ₁₀	24-hour	H6H	44 µg/m ³	N/A	N/A	N/A	N/A	N/A	N/A	52.66	150 µg/m ³	35%
PM _{2.5}	24-hour	98 th	19 µg/m ³	19.85	19.82	19.84	19.85	19.97	2012	19.87	35 µg/m ³	57%
PM _{2.5}	Annual	H1H	6.3 µg/m ³	6.56	6.57	6.56	6.57	6.56	2011	6.56	12 µg/m ³	55%

- 1) Background values are included in the model runs for all pollutants except CO.
- 2) PM₁₀ 24-hour model is run as an average of the modeled years due to the form of the standard.

The background values were added into the AERMOD model for every pollutant except for CO, so the model output results include background values.

As shown in Table 5-1 and 5-2, the refined grid NO₂ 1-hour model run showed concentrations from project sources within 90% of the standard. The full grid run showed higher concentrations near a cumulative source and over four miles from the Project area, therefore was removed from this analysis. Because the maximum impact receptor on the refined grid was located at the southeast corner of the modeled area near cumulative sources, the NO₂ 1-hour model was further refined around the two drilling pads (Pad 6 and 8) and a production pad (Pad 14) to show the maximum impacts from Project sources. The refined grid contains 25-meter spacing around the pad along with 50-meter spacing out to 200 meters and 100-m spacing out to 500-m was created in order to verify that the Project did not have the potential to exceed the standard. The largest concentrations from the refined NO₂ 1-hour model were found along the Pad 6 and Pad 8 (drilling pads) fenceline, with the largest value found on the northern fenceline of Pad 8. All concentrations were found to be below the standard. A contour plot of the concentrations of the full receptor grid for 1-hour NO₂ can be seen in Figure 15. The refined grid contour plot can be seen in Figure 16. There were no concentrations found that exceeded the standard during this refined grid model run due to the Project.

Contour plots of all pollutants and averaging periods modeled with the full receptor grid can be found in Appendix A.

5.2 PSD Increment Analysis

As mentioned in Section 4.2.4, an analysis comparing the West Fertilizer project to the Class I PSD increments was conducted to assess potential impacts only as a point of information, not as a regulatory PSD increment consumption analysis. Canyonlands and Arches National Parks are two Class I areas within 50 km of the West Fertilizer project. The project impact concentrations at the Class I areas were compared against the PSD Class I increments listed in Table 5-4 below. The model was run assuming that all fifteen pads will be production pads, and the Park Service Receptors were used. Three pads were assumed to have workover emissions, in order to get the maximum contribution from the Workover/Production pads. Cumulative sources were not included in the PSD Increment Analysis, as the model compares impacts from the project sources to the Class I PSD increments.

Table 5-4

**WEST FERTILIZER PSD INCREMENT COMPARISON
PARK SERVICE RECEPTOR GRIDS**

Pollutant	Average Time	Rank	Modeled Result All Routine Operations (µg/m ³)	Class I PSD Increment (µg/m ³)	Above the Increment?
NO ₂	Annual	Max	0.15	2.5	No
SO ₂	3-hour	H2H	0.11	25	No
SO ₂	24-hour	H2H	0.032	5	No
SO ₂	Annual	Max	-	2	No
PM ₁₀	24-hour	H6H	0.25	8	No
PM _{2.5}	24-hour	98 th	0.078	2	No
PM _{2.5}	Annual	H1H	0.012	1	No

1) PM₁₀ annual emissions were not modeled. PM_{2.5} 24-hour results were below the standard, so it can be conservatively assumed that the annual results will be below the standard.

2) Background values were not added into the PSD Increment model runs. These models evaluate impacts from project sources only.

Background values were not included in the PSD increment model runs, as the PSD Increment model evaluates impacts from project sources only. Also, a PSD increment for Class I areas exists for annual PM₁₀ as shown in Table 4-7. A separate run was not conducted for analysis since the 24-hour modeled impacts are below both the 24-hour and annual PM₁₀ increments. Since the short-term concentration is below the increment level for both averaging periods, without modeling it is known that the annual increment for PM₁₀ will not be exceeded.

5.3 HAP Pollutants

Impacts were evaluated for benzene, toluene, ethylbenzene, xylenes, n-hexane, and formaldehyde. For comparison to RELs, TSLs, and RfCs, toxic modeling was conducted and evaluated. Since there are no applicable federal ambient air quality standards for HAPs, RfCs, RELs, and TSLs are used as evaluation criteria. The evaluations against the RELs, TSLs, and RfCs were done using the maximum concentration of the unitized model on an hourly, daily, and annual basis and using the maximum hourly, daily, and average annual emissions of each HAP to scale the AERMOD results. Cancer risk was evaluated using the Class I receptors and the full receptor grid as discussed in Section 4.2.8. As shown in Tables 5-5 and Table 5-6, the concentrations of all HAPs are well below their respective RELs on an hourly period, TSLs on a daily period and RfCs on an annual

period. Furthermore, the cancer risk is much less than the threshold of 10 in a million (10 E-06) for both the Class I receptors and the full receptor grid.

As mentioned in Section 4.2.7, formaldehyde and benzene were modeled using maximum hourly emissions. Since the individual source model results for formaldehyde and benzene are available, they are shown in Tables 5-5 and Table 5-6, while for the other HAPs, the results are from the unitized emission rate methodology. The unitized methodology consists of using a 1 gram/second emission rate for all pollutants, and then multiplying the resultant concentrations by the actual emission rate of each pollutant. This method was shown to be conservative because the unitized results for formaldehyde and benzene were much higher than the impact results from using actual emissions in the model.

After running the full receptor grid model for benzene with maximum hourly emissions, a refined receptor grid was created with 50 meter spacing along the pad boundary and 100-meter spacing out to 500 meters around Pads 1 and 2, where the maximum concentrations occurred in the full receptor grid. Completion tank testing is an intermittent operation and, therefore, the refined grid was modeled with the completion tank emissions annualized, in order to better represent the actual hourly emissions from this source. The completion tank emissions only affect the HAPs runs, so this change did not affect any of the criteria pollutant model runs. The refined receptor grid can be seen in Figure 18 in Appendix A and the results are summarized in Table 5-5 below. No exceedances occurred for the unitized HAP model runs for toluene, ethylbenzene, xylenes, nor n-Hexane or the refined grid benzene and formaldehyde actual emission model runs.

**Table 5-5
FULL RECEPTOR GRID HAPS RESULTS**

Pollutant	1-hour Result (µg/m ³)	REL (µg/m ³)	24-hour Result (µg/m ³)	TSLs (µg/m ³)	Annual Result (µg/m ³)	RfC (µg/m ³)	IUR (1/(µg/m ³))	Cancer Risk (MEI)	Cancer Risk (MLE)
Benzene	5.47	27	2.40	18	0.39	30	7.8E-06	1.31E-06	7.91E-07
Toluene	798.6	37,000	48.10	2,512	2.18	5,000	N/A	N/A	N/A
Ethylbenzene	52.63	22,000	3.02	2,895	0.12	1,000	2.5E-06	1.29E-07	7.80E-08
Xylenes	412.1	8,700	24.39	14,473	0.89	100	N/A	N/A	N/A
n-hexane	14,961	180,000	860.23	180,000	28.7	700	N/A	N/A	N/A
Formaldehyde	6.98	55	1.78	37	0.25	9.8	1.3E-05	1.40E-06	8.45E-07
							Total Cancer Risk:	2.84E-06	1.71E-06

The one in one million MEI cancer risks for benzene, ethylbenzene, and formaldehyde were evaluated by finding the impact each pollutant had on the total cancer risk. Table 5-6 below shows that percent impact each pollutant had on the total. Ethylbenzene contributed to less than 5% of the total cancer risk, so was not included in the one in one million cancer risk evaluation. Since the cancer risk of ethylbenzene was so much lower than benzene and formaldehyde and it contributed so little to the overall cancer risk, it can be assumed that the one in one million cancer risk for benzene will be located inside the boundaries of the one in one million cancer risks for the other pollutants. The one in one million cancer risk was found multiplying the annual result from the model by the percent of the total cancer risk and dividing by the MEI. This value was then divided by 10⁶ to get the one in one million risk. The MEI is considered a more conservative comparison than the MLE, so the MEI cancer risk was used. Contour plots of the cancer risks were created by creating a contour of the one in one million cancer risk for benzene and formaldehyde and overlaying them to create one plot, which shows the distance to each pollutants calculated one in one million cancer risk. These contour plots can be seen in Figure 26. The calculated one in one million cancer risk concentrations are shown below in Table 5-6.

**Table 5-6
ONE IN ONE MILLION CANCER RISKS**

Pollutant	Annual Result (µg/m ³)	Cancer Risk (MEI)	% of Total Cancer Risk	One in One Million Cancer Risk
Benzene	0.39	1.31E-06	46%	8.80E-02
Ethylbenzene	0.12	1.29E-07	5%	2.65E-04
Formaldehyde	0.25	1.40E-06	49%	8.17E-05

- 1) Ethylbenzene cancer risk was converted back to unitized values to compare to unitized model run.

The potential for non-cancer effects is evaluated by comparing the exposure concentration with the RfC for that chemical. This concentration is divided by the RfC, to get the Hazard Quotient (HQ) for each compound. The total Hazard Index (HI) is found by summing all of the HQ for each compound. The total HI is compared to the acceptable HI defined by USEPA as 1. As shown in Table 5-7, the HI value for the project is less than 1.0, and therefore, cancer risks are not expected from any individual chemical or combination of chemicals

Table 5-7

FULL RECEPTOR GRID NON-CARNINOGENIC RISKS

Pollutant	Hazard Quotient (HQ)	Negligible Hazard?
Benzene	0.013	YES
Toluene	0.000436	YES
Ethylbenzene	0.00012	YES
Xylenes	0.0089	YES
n-hexane	0.041	YES
Formaldehyde	0.0255	YES
Hazard Index (HI)	0.089	YES

Table 5-8

PARK SERVICE RECEPTOR GRID HAPS RESULTS

Pollutant	1-hour Result (µg/m ³)	REL (µg/m ³)	24-hour Result (µg/m ³)	TSLs (µg/m ³)	Annual Result (µg/m ³)	RfC (µg/m ³)	IUR (1/(µg/m ³)) ²	Cancer Risk (MEI)	Cancer Risk (MLE)
Benzene	6.67	27	1.22	18	0.014	30	7.8E-06	4.70E-08	2.84E-08
Toluene	73.05	37,000	0.93	2,512	0.028	5,000	N/A	N/A	N/A
Ethylbenzene	4.81	N/A	0.058	2,895	0.0016	1,000	2.5E-06	1.72E-09	1.04E-09
Xylenes	37.70	22,000	0.47	14,473	0.011	100	N/A	N/A	N/A
n-hexane	1,369	N/A	16.56	5,875	0.36	700	N/A	N/A	N/A
Formaldehyde	1.21	55	6.88	37	0.0074	9.8	1.3E-05	4.14E-08	2.50E-08
							Total Cancer Risk:	9.01E-08	5.44E-08

1) Background values were not added into the HAP model runs.

5.4 Ozone and Secondary PM_{2.5}

Ozone and secondary PM_{2.5} were analyzed based on the EPA Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier I Demonstration Tool for Ozone and PM_{2.5} under the PSD Permitting Program (EPA, 2019). The project is not located in an area with unusual circumstances regarding complex terrain, proximity to very large sources of either NO_x or VOC, or meteorology. The climate zone can be defined as the relevant geographic area such that the lowest MERPs for the Southwest Climate Zone were considered representative and chosen for comparison with the project emissions, instead of selecting a hypothetical source from the EPA’s database. The lowest MERP values from the Southwest Climate Zone were compared in order to be the most conservative, since these values are based on the EPA modeling of hypothetical sources in the specific climate zone. Since the lowest MERP value was used from this area, it was not necessary to compare the project emissions to the hypothetical sources in the area. Total annual emissions from Year 8 for NO_x, VOC and SO₂ of the West Fertilizer Project were compared to the lowest illustrative MERP value in order to show that the project emissions will not exceed the SIL value for the region. According to Figure 3-4 in the MERP Guidance, the West Fertilizer Project is located in the Southwest Climate Zone. Table 5-9 summarizes the comparison of the project emissions to the lowest MERP values for the Southwest Climate Region.

Table 5-9

YEAR 8 PROJECT EMISSIONS COMPARISON TO MERP VALUES

Pollutant	Total Project Emissions (tpy)	Lowest MERP Value (tpy)	Combined % of MERP
8-hr O ₃ from NO _x	162.15	204	90.59
8-hr O ₃ from VOC	121.70	1,097	
Daily PM _{2.5} from NO _x	162.15	6,514	2.54
Daily PM _{2.5} from SO ₂	0.75	1,508	
Annual PM _{2.5} from NO _x	162.15	11,960	1.37
Annual PM _{2.5} from SO ₂	0.75	10,884	

1) Lowest MERP Value from Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and PM_{2.5} under the PSD Permitting Program (EPA, 2019).

A value of less than 100% for all pollutants indicates that the recommended SIL will not be exceeded when considering the combined impacts of the precursors. The total project emissions do not exceed the illustrative MERP values from the EPA MERP guidance.

5.5 Lead and Ammonia

As briefly mentioned in Sections 4.2.4, there are minimal emissions expected from the West Fertilizer project of ammonia or lead. The majority of onsite sources during all three modeling operations: Construction/Drilling, Completions, and Productions/Workovers, are fueled by diesel or field natural gas. There are little to no lead concentrations in either fuel source and currently AP-42 does not have a default emission factor for diesel-fired sources for lead or ammonia. Lead from field natural gas is considered negligible also.

Ammonia emissions are not expected from the West Fertilizer project. Generally, ammonia emissions from the oil and gas industry are only when selective catalytic reduction or non-catalytic reduction emission control devices are used. Some selective catalytic and non-catalytic reduction devices inject ammonia into the exhaust gas to reduce NOx emissions and subsequently, the stack exhaust may include ammonia emissions. This process is known as ammonia slip. Since no emission sources in the West Fertilizer project will use these types of devices, ammonia emissions are negligible to non-existent.

5.6 Visibility

The VISCREEN inputs used in the model are listed in Table 4-8 and Table 4-9. Maximum hourly emissions of each scenario were used in the model. Workover emissions on the production pads were not included because workovers are not a continuous operation and will not impair the long-term visibility of the area. Emissions from completions were not included in the emissions from the drilling pads because completions will not occur in the same hour as drilling, and so as to be conservative, the higher emissions rate (drilling) was used.

The screening criteria in VISCREEN is 2.0 for ΔE and 0.050 for C. The results for visibility inside the Class I areas are listed in Table 5-10 and 5-11 below. The results of the visibility analysis showed no exceedances of the screening criteria for plume contrast C (the contrast at a given wavelength of two colored objects) or plume coloration ΔE (the parameter used to characterize the perceptibility of the difference between the plume and the viewing background) inside either Canyonlands or Arches National Park. These results show that the short term and long visibility of the Class I Areas will not be affected by the Project. The analysis showed two exceedances for ΔE for sky of 2.747 and 2.294 and one ΔE exceedance for terrain of 5.226 outside of Arches National Park during the drilling scenario and one ΔE exceedance for terrain of 4.679 during the construction scenario. The exceedances occur within 1 km of the Project Source (designated as the closest pad to the Class I Area). Drilling and construction are short term activities and the exceedance occurs outside of the Class I Area and within the Project Area, so this result will not affect the long-term visibility of Arches or Canyonlands National Parks. There were no other exceedances caused by the Project inside or outside the Class I Areas.

Table 5-10

VISCREEN RESULTS FOR INSIDE ARCHES NATIONAL PARK

Scenario	ΔE	ΔE	C	C
	Sky Background (forward, backward)	Terrain Background (forward, backward)	Sky Background (forward, backward)	Terrain Background (forward, backward)
Construction	0.257, 0.040	0.926, 0.043	0.006, -0.001	0.006, 0.001
Drilling	0.575, 0.470	1.036, 0.358	0.002, -0.006	0.008, 0.002
Routine Operations	0.074, 0.054	0.146, 0.040	0.001, -0.001	0.001, 0.000

Table 5-11

VISCREEN RESULTS FOR INSIDE CANYONLANDS NATIONAL PARK

Scenario	ΔE	ΔE	C	C
	Sky Background (forward, backward)	Terrain Background (forward, backward)	Sky Background (forward, backward)	Terrain Background (forward, backward)
Construction	0.044, 0.007	0.099, 0.005	0.001, 0.000	0.001, 0.000
Drilling	0.086, 0.068	0.111, 0.040	0.000, -0.001	0.001, 0.000
Routine Operations	0.011, 0.008	0.015, 0.005	0.000, 0.000	0.000, 0.000

5.7 Deposition

Deposition model runs were completed on an annual basis under the same source operation and layout assumptions as the NO₂ annual model run. Five (5) pads are assumed to be drilling/production pads, with two (2) producing wells and the production sources operating when the drilling sources do not. One (1) location is assumed to be a drilling/completion pad, three (3) pads are assumed to be production/workover pads and the six (6) remaining locations were modeled as production pads. National Park Service recommends that applicable sources assess impacts of nitrogen and sulfur deposition at Class I areas (FLAG 2010). This guidance recognizes the importance of establishing critical deposition loading values (“Critical Loads”) for each specific Class I area as these Critical Loads are completely dependent on local atmospheric, aquatic and terrestrial conditions and chemistry. Critical Load thresholds are essentially a level of atmospheric pollutant deposition below which negative ecosystem effects are not likely to occur. FLAG (2010) does not include any Critical Load levels for specific Class I areas and refers to site-specific critical load information on FLM websites for each area of concern. This guidance does, however, recommend the use of DATs developed by the NPS and the United States

Fish and Wildlife Service (USFWS). The DATs represent screening level values for nitrogen and sulfur deposition for individual projects with deposition impacts below the DATs considered negligible. DAT have been established for both nitrogen and sulfur deposition and in western Class I areas they are 0.005 kilograms per hectare per year (kg/ha/yr) for both nitrogen and sulfur deposition.

Local deposition trends were analyzed by the National Atmospheric Deposition Program at Canyonlands National Park. Nitrogen deposition has been increasing since 2015, with 2018 having the highest value of 1.912 kg/ha NO₃. Sulfur deposition has been decreasing since 2015 with a maximum value of 1.428 kg/ha and the most recent value of 0.739 kg/ha in 2018. The modeling results for the Project showed a maximum deposition result of 0.0126 kg/ha-yr for nitrogen and 0.00005 kg/ha-yr for sulfur as shown in Table 5-12. The maximum result was shown at Arches National Park. The Project results added to the local deposition values for 2018 show NO₃ deposition value of 1.923 kg/ha and SO₄ deposition value of 0.739 kg/ha. Canyonlands National Park and Arches National Park have a minimum mean critical load value for nitrogen for empirical herb/shrub of 3 kg/ha-yr (214.1 eq/ha-yr) and total forest acidification (nitrogen plus sulfur) critical load of 2,603.6 eq/ha-yr and 2,483.2 eq/ha-yr respectively (USEPA FS NPS, 2019a and b). Although the Project deposition results are higher than the DATs, the Project deposition results combined with the local deposition trends are considerably lower than the critical load factor for each of the National Parks.

Table 5-12
NITROGEN AND SULFUR DEPOSITION RESULTS
LEVEL 2 ANALYSIS

Pollutant	Dry Deposition (µg/m³)	HNO₃/NO₂ Ratio	Molecular Weight Ratio	Project Dry Deposition (kg/ha-yr)	Local Dry Deposition for 2018 (kg/ha-yr)	Total Dry Deposition (kg/ha-yr)
NO ₂	0.00418	1.37	0.22	0.013	1.912	1.925
SO ₂	0.00	-	0.50	0.000	0.739	0.739

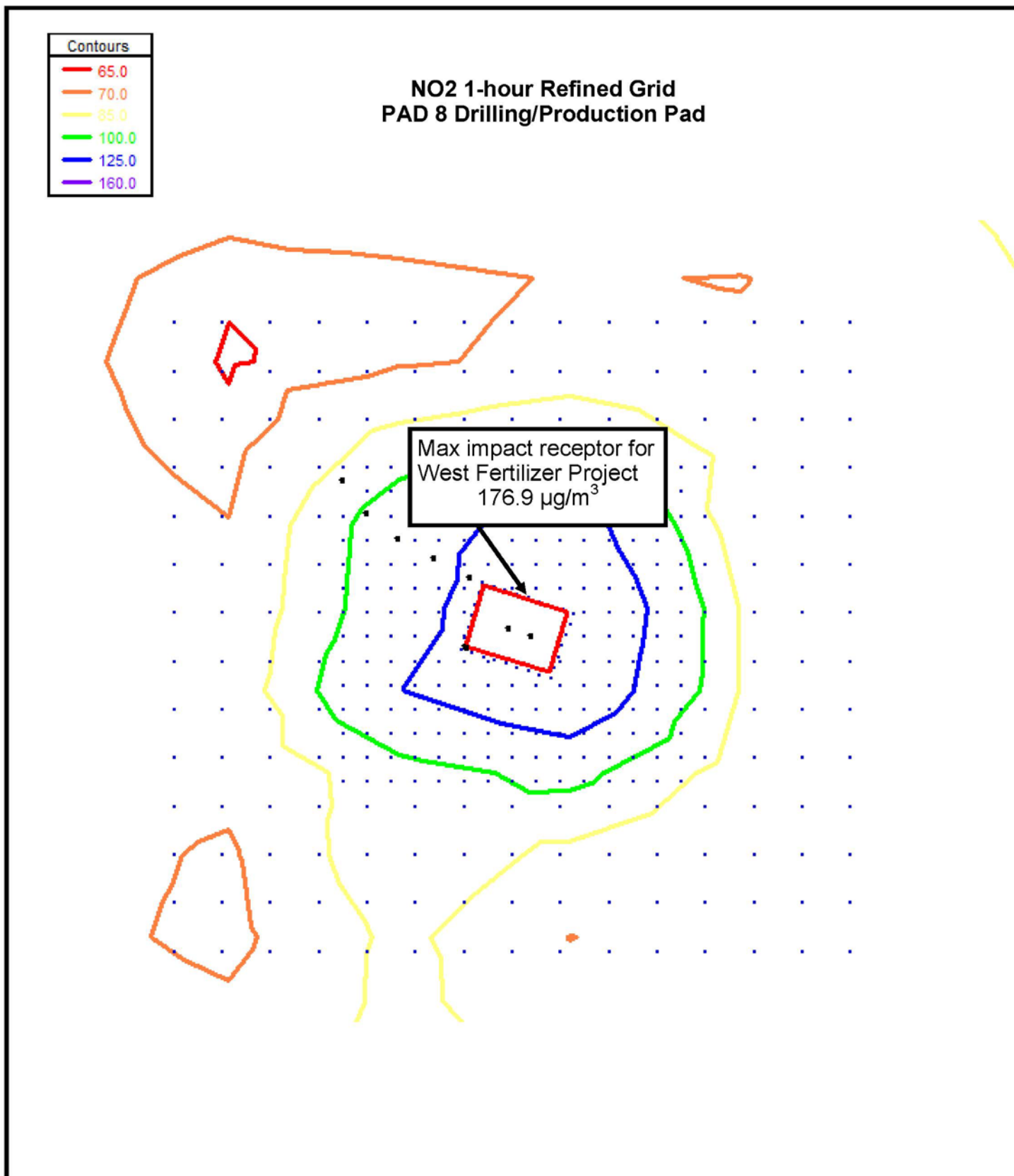
5.8 Conclusions


As detailed in the tables above, the West Fertilizer Project potential impacts are less than NAAQS for all criteria pollutants and averaging periods as well as below all REL, TSLs, and RfC thresholds for HAPs both within the Project Area and at both nearby Class I areas. Ozone and secondary PM_{2.5} are both below the SIL when compared to the MERP values. There were no visibility exceedances found within wither Class 1 Area. The level 2 visibility analysis showed two exceedances for Δ E and 2.294 and one Δ E exceedance for terrain outside of Arches National Park during the drilling scenario and one Δ E exceedance for terrain during the construction scenario. The exceedances occur within 1 km of the Project Source (designated as the closest pad to the Class 1 Area). Drilling and construction are short term activities and the exceedance occurs outside of the Class I Area and within the Project Area, so this result will not affect the long-term visibility of Arches or Canyonlands National Parks. There were no other exceedances caused by the Project inside or outside the Class I Areas.

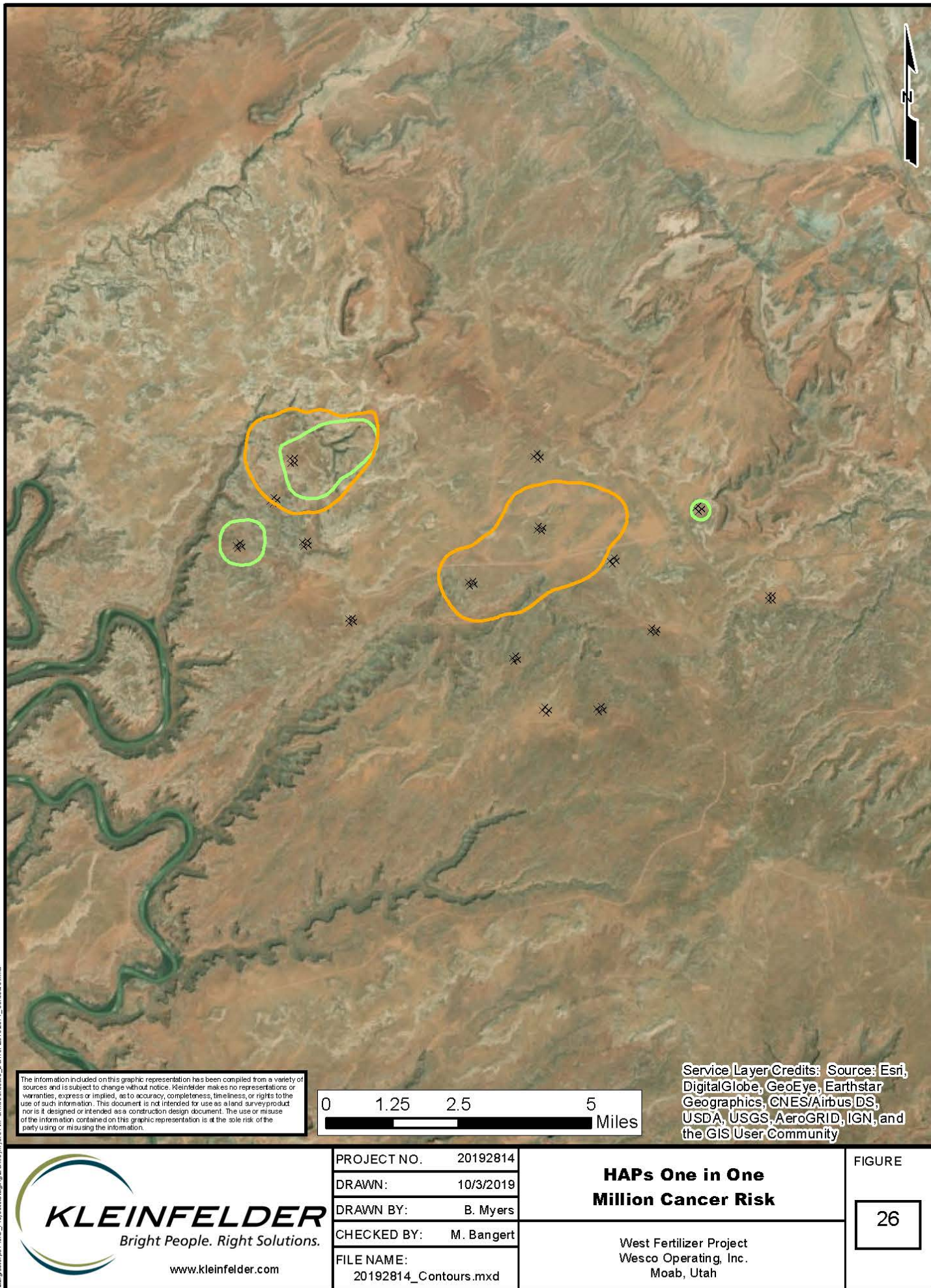
The Project results for deposition combined with local deposition trends are considerably lower than the critical load factor for each of the Class I Areas. Lastly, the calculated cancer is much less than 10 in a million at the Project Area and at the Class I areas.

The near-field modeling was conducted with some conservative assumptions that could be refined in the future. These assumptions include the following:

- Production/workover pads are assumed to have three workover activities occurring at the same time. Workovers will typically occur on a one well per pad basis.
- NO₂ annual and deposition were modeled assuming the maximum wells that could possibly be drilled in a year with continuous drilling for the full year and may not reflect actual operations.
- HAPs (besides formaldehyde and benzene) were analyzed on a unitized basis, which is conservative.
- Annual background values were used for all pollutants besides NO₂. Using a single background value is a conservative approach, and upon using monthly background value for NO₂, the results decreased.



 www.kleinfelder.com	PROJECT NO. 20192814	WESCO OPERATING, INC. NO2 1-HOUR REFINED GRID	FIGURE 16
	DRAWN: 9/16/2019		
	DRAWN BY: M. Bangert	West Fertilizer Project Moab, Utah	
	CHECKED BY: K. Meszaros		
FILE NAME: NO2 1-hr.pdf			



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