US. Department of the Interior
Bureau of Land Management

July 2023 Competitive Oil and Gas Lease Sale EA - Final

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Chapter 1. Introduction 6
1.1. Background 6
1.2. Project Location 7
1.3. Purpose and Need for Action 11
1.4. Decision to be Made 11
1.5. Land Use Plan Conformance 11
1.6. Tiering and Incorporation by Reference 11
1.7. Relationship to Statutes, Regulations or Other Plans 12
1.8. Public Involvement 14
Chapter 2. Proposed Action and Alternatives 16
2.1. Alternative A- Proposed Action 16
2.2. Alternative B-No Action or No Leasing 16
2.3. Alternatives Considered but Not Analyzed in Detail 17
2.4. Reasonably Foreseeable Development Scenario 17
2.4.1. General Assumptions for the RFFD Scenario 18
2.4.2. Exploration Drilling and Production Assumption 19
2.4.3. Exploration Drilling 19
2.4.4. Production 19
2.4.5. Well Stimulation 20
Chapter 3. Affected Environment and Environmental Effects 21
3.1. Analysis Process Overview 21
3.1.1. Methods and Assumptions 21
3.1.2. Affected Area and Degree of Effects 21
3.1.3. Time Period Considered 21
3.1.4. Analysis Area 22
3.1.5. Supplemental Authorities and Other Resources Considered 22
3.2. Environmental Effects of Alternative A and Alternative B 27
3.2.1. Air Quality and Climate Change 28
3.2.2. Cultural Resources 39
3.2.3. Water Resources: Surface and Ground 40
3.2.4. Wetlands and Riparian Zones 43
3.2.5. Fish and Wildlife 44
3.2.6. Special Status Species 45
3.2.7. Migratory Birds 47

3.2.8. Visual Resource Management 48
3.2.9. Livestock Grazing 49
3.2.10. Geology and Mineral Extraction 50
3.2.11. Wastes, Hazardous and Solid 52
3.2.12. Environmental Justice 53
3.2.13. Native American Religious and other Concerns 56
3.2.14. Human Health and Safety 57
Chapter 4. Cumulative Impacts 59
4.1. Resources 59
4.2. Past, Present, and Reasonably Foreseeable Future Actions 59
4.3. Cumulative Impacts 60
4.3.1. Air Quality and Climate Change 60
4.3.2. Cultural Resources 63
4.3.3. Water Resources: Surface and Ground 64
4.3.4. Wetlands and Riparian Zones 65
Fish and Wildlife, Special Status Species, Migratory Birds 65
4.3.5. Visual Resource Management 66
4.3.6. Livestock Grazing 66
4.3.7. Geology and Mineral Extraction 66
4.3.8. Wastes, Hazardous and Solid 67
4.3.9. Environmental Justice 67
4.3.10. Native American Religious and other Concerns 67
4.3.11. Human Health and Safety 68
Chapter 5. Consultation and Coordination 69
5.1. Individuals, Organizations, and Tribes Consulted 69
5.1.1. Individuals and Organizations 69
5.1.2. Tribes 69
Chapter 6. List of Preparers 70
Chapter 7. References 71
Appendix A-Maps 73
Appendix B-Supporting Tables 84
Appendix C -Nominated Parcels 87
Appendix D-Stipulations and Lease Notices 89
Appendix E-Ely District Best Management Practices for Oil & Gas 94
Appendix F-Hydraulic Fracturing Technology Paper 102

Appendix I-Socioeconomic Analysis Baseline 117
Appendix J -Analysis Tiered to and Incorporated by Reference 123
Appendix K-Leasing Preference Ratings for Nominated Lease Parcels..... 131
Appendix L- Summary of Public Comments and Responses 133

Chapter 1. Introduction

1.1. Background

It is the policy of the Bureau of Land Management (BLM), as mandated by various laws including the Mineral Leasing Act (MLA) of 1920 and the Federal Land Policy and Management Act (FLPMA) of 1976 (FLPMA), to make mineral resources available and to support their development to meet national, regional, and local needs. 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 (FOOGLRA) 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.

During the land use planning process required by the FLPMA[1] , the BLM analyzes several alternatives before deciding which public lands and minerals are open for leasing and under what terms and conditions. In accordance with t

he 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 (43 Code of Federal Regulations [CFR] 3101.1-2) are used to mitigate potential impacts to resources. Any surface management of non-BLM 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. The Nevada State Office (NSO) reviews the EOIs 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. Once the NSO reviews the nominations, removes lands not legally available for leasing, and compiles the remaining lands, NSO 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 effects are similar both quantitatively and qualitatively to those identified in the programmatic documents, again, keeping in consideration the lease stipulations.

District and field office staff review 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).

[1] 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.

Once the Field Office completes the interdisciplinary parcel review (ID Team) the BLM determines if preparation of an EA is necessary for considering the public nominated parcels for the lease sale. If so, 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)[2]. Additional information regarding the BLM's leasing process is also made available for public review and reference. When the public comment period ends, the BLM analyzes and incorporates the substantive comments, where appropriate, into the EA. 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 30-day protest period, and includes the revised EA and unsigned FONSI. If any changes to the parcels, lease notices, or stipulations result from the protests, an erratum to the NCLS would be posted to the BLM website and on 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 July 25, 2023.

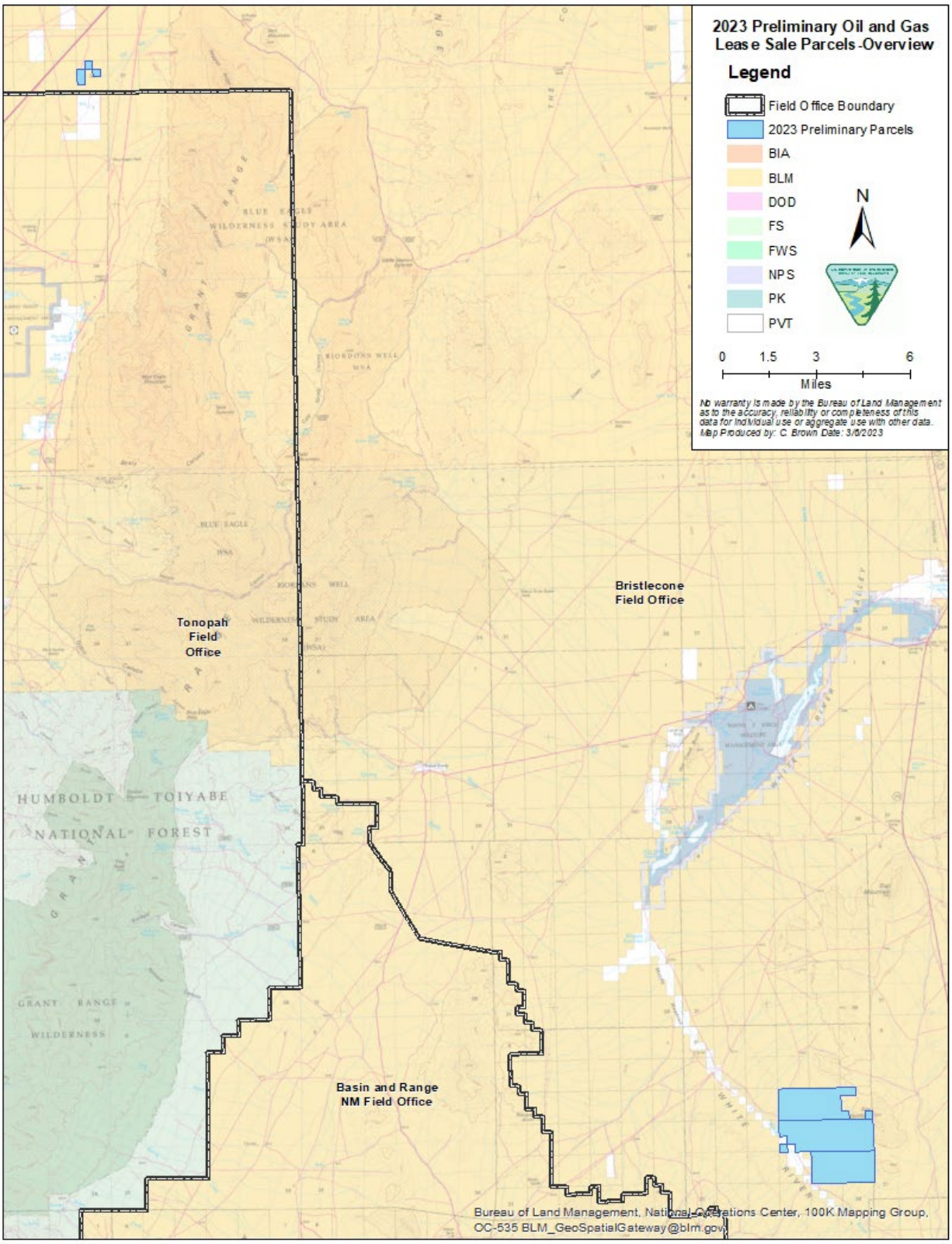
Once the lease has been issued, the lessee has the right to use as much of the leased land as necessary to explore for, drill for, extract, remove, and dispose of oil and gas deposits located under the leased lands, subject to non-discretionary statutes, the standard lease terms and stipulations. Even 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 effects on the land, air, water, cultural, biological, and visual elements of the environment, as well as other land uses or users. 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)[3]. A producing lease can be held indefinitely by economic production.

1.2. Project Location

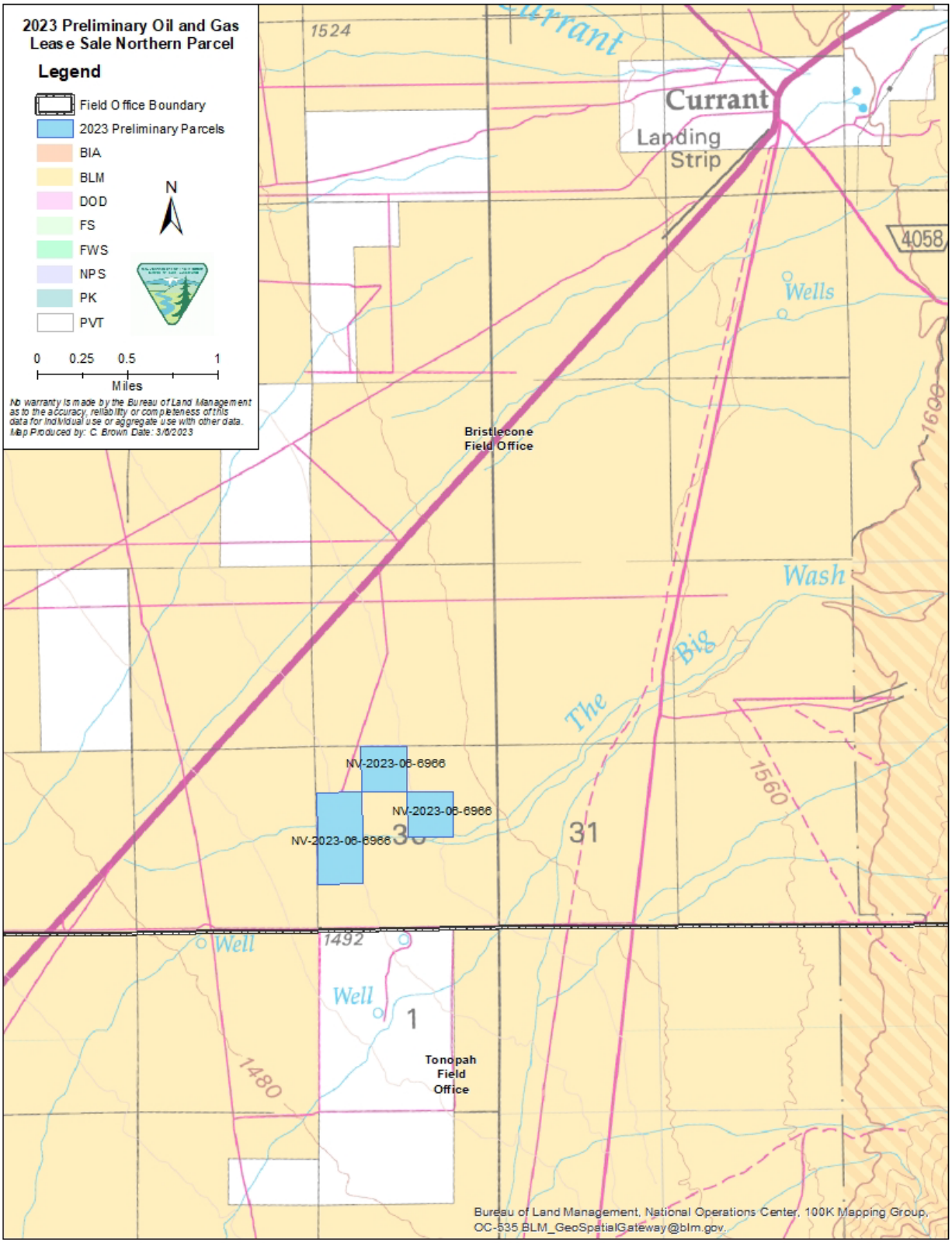
The Bureau of Land Management (BLM) Ely District (EYDO) Bristlecone Field (BFO) office encompasses about 6.3 million acres of public lands managed by the BLM. The July 2023 preliminary parcel list (Appendix C) contains 4 parcels covering 4,720 acres in the Bristlecone Field Office (Figures 1-3). The lease parcels are located in White River and Railroad Valley, northern Nye County, Nevada.

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

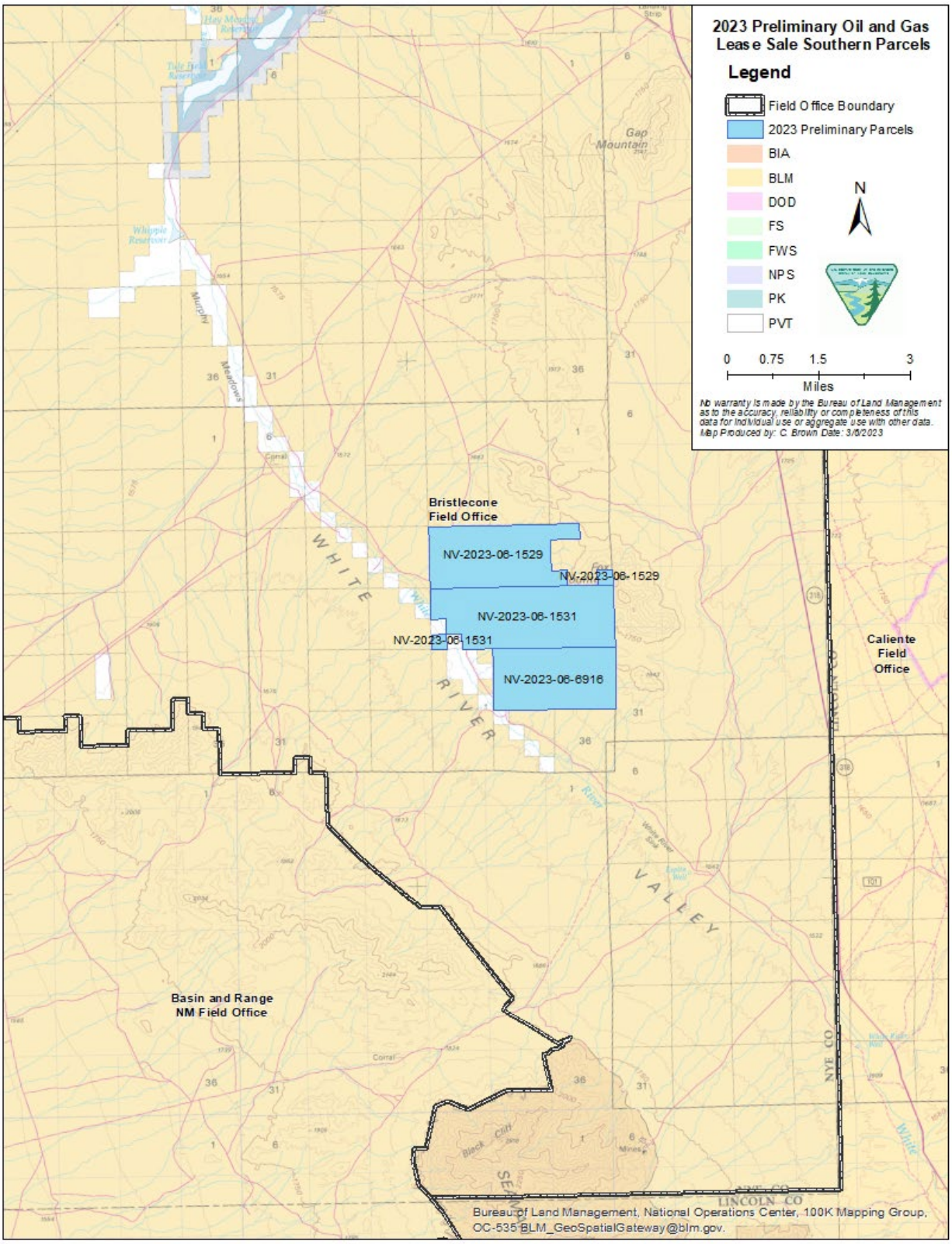
[3] Unless the lease is within an Operating Unit and the Unit is held by production of wells on other leases within the Unit.



Map 1. Overview map showing the four proposed parcels analyzed in the July 2023 Oil and Gas Lease Sale EA



Map 2. Map showing the Northernmost proposed parcel analyzed in the July 2023 Oil and Gas Lease Sale EA



Map 3. Map showing the Southernmost proposed parcels analyzed in the July 2023 Oil and Gas Lease Sale EA

1.3. Purpose and Need for Action

The purpose of this action is for the EYDO to respond to Expressions of Interest. The need for the Proposed Action is established by the BLM's mandates under the Acts discussed in Section 1.1, as well as the Mining and Minerals Policy Act of 1970, as amended.

1.4. Decision to be Made

Based on the EA, BLM management will decide which parcels to make available for leasing and which stipulations and lease notices to attach. The parcels included in the State Director's decision are made available to the public through the NCLS, which specifies stipulations applicable to each parcel. (Here and throughout this EA the term "parcels" refers to "parcels or parts of parcels," as stipulations are applied to the smallest appropriate part of a parcel, down to 40-acre quarter-quarter section or lot, or smaller if specified in the applicable RMP.)

1.5. Land Use Plan Conformance

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 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 CFR 3101.1 and 43 CFR 1601.0-7(b); BLM Manual 1601.09 and Handbook H-1624-1).

The Proposed Action is in conformance with the Ely District Record of Decision and Approved Resource Management Plan, and all subsequent applicable amendments. The RMP addresses land use goals and objectives, allowable uses, and management actions for the field office.

Ely District RMP, Approved 2008

The Proposed Action is in conformance with the Goals and Objectives of the Ely District Record of Decision and Approved Resource Management Plan (BLM 2008, the Ely District RMP), as amended, which are to: "*provide for the responsible development of mineral resources to meet local, regional, and national needs, while providing for the protection of other resources and uses* (page 92)." The RMP also states in part, "*It is BLM policy to apply the least restrictive constraint to meet the resource protection objective* (page 97)." In addition, "*Timing limitations indicate that a leased area generally is open to development activities except during a specified period of time to protect identified resource values such as wildlife* (page 92)." The stipulations for Fluid Minerals Lease Notices in Appendix A, Section 2 of the Ely District RMP were updated February 11, 2015 under a plan maintenance action.

The best available science was used by Resource Specialists (hereby referred to as the interdisciplinary team, or IDTeam) to analyze the effects to their respective resources as a result of the Proposed Action. Stipulations were applied based on the analysis in the 2007 Ely Proposed Resource Management Plan/Final Environmental Impact Statement (Ely District PRMP/FEIS) and the Ely District RMP.

1.6. Tiering and Incorporation by Reference

This document tiers to and incorporates by reference the following documents as appropriate when discussing the affected environment, existing and current conditions, impacts analysis, and stipulations and conditions:

- 2008 Ely District Record of Decision and Approved Resource Management Plan (2008 Ely District RMP)

- 2007 Ely Proposed Resource Management Plan/Final Environmental Impact Statement (2007 Ely District PRMP/FEIS)

1.7. Relationship to Statutes, Regulations or Other Plans

The Proposed Action and alternatives are in conformance with the NEPA of 1969 (P.L. 91-190 as amended; 42 U.S.C. §4321 et seq.); the MLA of 1920 as amended and supplemented (30 U.S.C. 181 et seq.); the FOOGLRA of 1987, with regulatory authority under 43 CFR Part 3100, Onshore Oil and Gas Operations (43 CFR Part 3160); and Title V of the FLPMA of 1976, Rights-of-Way (ROW), with regulatory authority under 43 CFR Part 2800, ROW.

Purchasers of oil and gas leases are required to abide by all applicable federal, state, and local laws and regulations. This includes obtaining all required permits if they develop the lease. All activities will be subject to regulations including, but not limited to, the following:

Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. 668) prohibits the direct or indirect take of an eagle, eagle part or product, nest, or egg. The term "take" includes "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb." The U.S. Fish and Wildlife Service (USFWS) has guidance for proposed projects that have the potential to impact eagles or their habitat; BLM biologists and USFWS would address this at the time of additional project-specific analysis.

BLM and Nevada Department of Wildlife (NDOW) Memorandum of Understanding (MOU) directs the agencies' cooperative management of wildlife and fish resources and their habitat on public lands, as established in 1971. The BLM meets its obligations under the MOU by managing public lands to protect and enhance food, shelter and breeding areas for wild animals.

BLM Special Status Species (SSS) are designated by the State Director for each state and are defined as those plant and animal species for which population viability is a concern, as evidenced by a significant current or predicted downward trend in population numbers or density, or in habitat capability that would reduce the species' existing distribution. BLM manages SSS habitats so as to promote their continuing viability. BLM Manual 6840, Special Status Species Management provides additional guidance.

Clean Air Act *of 1970*, as amended and supplemented by subsequent legislation, established air quality standards to protect health and public welfare and to regulate emissions of hazardous air pollutants.

Clean Water Act *of 1972* provides extensive direction regarding the degradation of water sources. The Clean Water Act originally applied to "navigable waters"; the United States Supreme Court determined in the 2006 case Rapanos v. United States that it also held for "waters of the United States," defined as "including only those relatively permanent, standing or continuously flowing bodies of water forming geographic features" that are described as "streams[,] … oceans, rivers, [and] lakes."

Endangered Species Act (ESA) of 1973**,** Section 7, requires federal agencies to "insure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat of such species."

Energy Policy Act *of 2005*, which is directed towards a reduced dependence on foreign energy sources and encourages the development of alternative energy.

Executive Order (EO) 11988 –instructs all federal agencies to avoid development in a floodplain whenever possible; ***EO 13690*** provides further instruction, along with FEMA guidelines for implementing both (FEMA 2015).

Executive Order (EO)11990 – Protection of wetlands tells agencies to "minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands" and instructs, "when Federally-owned wetlands or portions of wetlands are proposed for lease, easement, right-of-way or disposal to non-Federal public or private parties, the Federal agency shall (a) reference in the conveyance those uses that are restricted under identified Federal, State or local wetlands regulations;

and (b) attach other appropriate restrictions to the uses of properties by the grantee or purchaser and any successor, except where prohibited by law; or (c) withhold such properties from disposal."

Executive Order 12898 required federal agencies to promote environmental justice by determining, and addressing as needed, whether the agency's programs, policies, and activities have a disproportionately high and adverse human health or environmental effects on minority populations and low-income populations. When considered at a scale of county sub-regions surrounding the Analysis Area, while there are no known communities with disproportionate representation of any minority race or ethnicity as compared to the state of Nevada overall, the region does have an American Indian population as compared to the state overall; however, it would not be disproportionately affected. See Appendix I.

Federal Land Policy and Management Act of 1976, as amended, directs the Secretary of the Interior to manage the public lands for multiple use and sustained yields.

Instruction Memo 2023-007 Evaluating Competitive Oil and Gas Lease Sale Parcels for Future Lease Sales: Provides direction for assessing lease sale parcels to be included in competitive lease sales, including preference for proximity to existing development and avoiding parcels in habitat connectivity areas.

Instruction Memo 2023-008 Impacts of the Inflation Reduction Act of 2022 (Pub. L. No. 117-169) to the Oil and Natural Gas: Summarizes the changes to BLM fiscal terms and the termination of noncompetitive leasing, including the impact on pending leases.

Instruction Memo 2023-010 Oil and Gas Leasing – Land Use Planning and Lease Parcel Reviews: Replaces IM 2021-027 to update the leasing process, including consistency with the Inflation Reduction Act. This includes identifying potential lease parcels, setting out opportunities for public participation and requirements for environmental analysis, providing a specific option for the BLM to use a formal nomination process and confirming the Inflation Reduction Act's prohibition on noncompetitive leasing.

Mineral Leasing Act of 1920, as amended and supplemented by subsequent legislation, provides for the authorization of BLM to administer leasing of public lands for leasable minerals.

National Historic Preservation Act **(NHPA)** ***Section 106*** requires Federal agencies to take into account the effects of their undertakings on historic properties. The BLM also must comply with the Nevada State Historic Preservation Office (SHPO) protocol agreement, which is authorized by the National Programmatic Agreement between the BLM, the Advisory Council on Historic Preservation and the National Conference of State Historic Preservation Officers.

Safe Drinking Water Act is the federal law that protects public drinking water supplies throughout the nation. The U.S. Environmental Protection Agency (EPA) sets standards for drinking water quality and, with its partners, implements various technical and financial programs.

Secretarial Order 3289 addresses current and future impacts of climate change on America's land, water, wildlife, cultural-heritage, and tribal resources.

Secretarial Order 3347 tasks the Department with enhancing conservation stewardship, increasing outdoor recreation opportunities, and improving the management of game species and their habitat.

Secretarial Order 3356 directs the Department to use best available scientific information and to coordinate with State fish and game agencies on energy-related development decisions.

Secretarial Order 3362 directs the Department to improve habitat quality in Western Big-Game Winter Range and Migration Corridors.

Migratory Bird Treaty Act (MBTA) of 1918 protects migratory birds, with the exception of native resident game birds. Under this act, nests with eggs or the young of migratory birds may not be harmed, nor may any migratory birds be killed. ***EO 13186*** (2001) provided federal agencies with further direction to implement the MBTA.

Wild Free-Roaming Horse and Burro Act of 1971 (WFRHBA) directs the BLM's responsibility for the protection, management and control of wild horses and burros "in a manner that is designed to achieve and maintain a thriving natural ecological balance on the public lands." The BLM is mandated to manage wild horses and burros only within those areas on public lands where they were found in 1971 when the WFRHBA was passed. They cannot be relocated elsewhere in the District; new Herd Management Areas (HMAs) cannot be created; and BLM cannot expand the HMAs to replace habitat lost. Management guidance includes 43 CFR 4700 and the Wild Horses and Burros Management Handbook H-4700-1.

1.8. Public Involvement

External scoping: In preparation for the lease sale, BLM released the current parcel list, maps, and shapefiles to the public for scoping comments from November 21st to December 21st , 2022. The BLM received 17 scoping letters on the lease sale, a summary of comments is provided in Appendix L. Scoping comments were similar-themed and include topics such as compliance with NEPA, greenhouse gases and climate change, delaying or halting leasing, leasing reform, updating resource management plans, protection for wildlife habitats, environmental justice communities, cultural properties, human health and safety, water rights and water resource protection. This list is not all inclusive.

Internal scoping: In preparing the preliminary EA that would be released for public comment, the Bristlecone Field Office ID Team internally scoped the project on December 20th, 2022.

Public Comment Period on Preliminary EA: A 30-day public comment period was offered from April 4-May 4, 2023. Comment letters were received from the following entities or individuals: National Wildlife Federation and the Nevada Wildlife Federation, Theodore Roosevelt Conservation Partnership, United States Environmental Protection Agency, Nevada Department of Wildlife, Friends of the Earth, Western Environmental Law Center et al. and two individuals who did not provide their names. A table summarizing and responding to the comments received can be found in Appendix L.

Native American Coordination: The Ely District Office invited Tribes to engage in Government-to-Government consultation as directed in Executive Order 13175, Consultation and Coordination with Indian Tribal Governments. The Chairman of the Duckwater Shoshone Reservation was contacted by email on November 22, 2022, to notify the tribe of the public scoping period. Certified letters inviting the tribes to formal consultation on the finalized parcels were sent on March 1, 2023. A list of the Tribes who were sent certified letters inviting them to formal consultation can be found in Chapter 5, section 5.1.1. The Duckwater Shoshone Tribe Chairman/Tribal Historic Preservation Officer attended a field visit and toured the parcels on April 17, 2023. The Ely Shoshone Tribe and the Duckwater Shoshone Tribe may conduct additional field visits if an Application for Permit to Drill (APD) is submitted for any of these parcels. The opportunity for tribes to initiate formal Government-to-Government consultation is on-going.

Nevada Department of Wildlife and U.S. Fish and Wildlife Service Input: Concurrently with initial internal scoping, the EYDO provided the proposed lease sale parcel locations to Nevada Department of Wildlife (NDOW) and U.S. Fish and Wildlife Service (USFWS).

In regard to the parcel located in Railroad Valley, the USFWS expressed concerns for the Railroad Valley Springfish, Railroad Valley toad, Lockes pyrg, and Toquerville springsnail, along with oil and gas leasing within the Railroad Valley hydrobasin. The USFWS also expressed concern for two plant species: the Railroad Valley globemallow and Currant milkvetch. For the three parcels located in White River Valley, the USFWS expressed concern for the federally listed and endangered White River spinedace and several species of springsnails, The endangered White River spinedace occurs on land managed by the NDOW in the Kirch Wildlife Management Area and on private land. The parcels proposed for the July 2023 lease sale occur within approximately 14.0 to 18.0 miles of the spinedace habitat. Within the White River Valley and Pahroc hydrobasins, Tiehm's blazing star is known to occur.

NDOW recommended the inclusion of all applicable greater sage-grouse stipulations from the 2015 Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment and Record of Decision (ARMPA) and the 2022 Maintenance Action. NDOW also included stipulations and recommendations for wildlife resources.

Recent Court Decisions:

On February 11, 2022, the United States District Court for the Western District of Louisiana issued an order that, in general, enjoined the Department, among other agencies, from taking action in connection with Section 5 of Executive Order 13990 and the Interagency Working Group ("IWG") established by that Order relating to the measurement of the Social Cost of Greenhouse Gases.

Because this proposed sale relies upon the IWG and Section 5 of the Executive Order, the District Court's injunction precluded the Department from advancing this and similar proposed sales. On March 16, 2022, the Court of Appeals for the Fifth Circuit stayed the injunction pending appeal. Louisiana by & through Landry v. Biden, No. 22-30087, 2022 WL 866282 (5th Cir. Mar. 16, 2022).

Previously, on January 27, 2022, the United States District Court for the District of Columbia issued a decision in Friends of the Earth v. Haaland, vacating offshore oil and gas lease sale 257 because the Department did not quantify the effects of that sale on emissions from the foreign consumption of oil and gas, despite (in the Court's view) possessing the tools and methodology to do so. 2022 WL 254526 (D.D.C. Jan. 27, 2021). Given the analysis presently available to BLM, Friends of the Earth does not affect BLM's analysis of this proposed lease sale.

Unlike the Bureau of Ocean Energy Management ("BOEM")—the agency responsible for sale 257—the Bureau of Land Management has not traditionally used simulation tools like MarketSim (the tool at issue in Friends of the Earth and used by BOEM in preparation for sale 257) when evaluating effects on foreign consumption from proposed BLM State Office lease sales. Indeed, the Friends of the Earth Court recognized that it had previously upheld BLM's decision not to consider foreign effects where BLM had "refused to quantify emissions resulting from particular lease parcels, and thus could not conceptualize the extent to which the lease sales would contribute to the local, regional, and global climate change." 2022 WL 254526, at *13 n.13 (quotation omitted). Likewise, the Court ruled against BOEM for forgoing the foreign consumption analysis for sale 257 in part because BOEM shortly thereafter applied that analysis to a draft NEPA analysis for proposed offshore sale 258. The court's reasoning does not apply to BLM, which, as noted above, lacks access to any historic or imminent foreign effects analysis at the level of individual BLM State Office lease sales. If and when BLM undertakes this or similar analysis in the future, it may be appropriate to include and consider that analysis when proposing onshore lease sales.

Chapter 2. Proposed Action and Alternatives

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. If a lessee 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; ownership of the minerals revert to the federal government and the lease can be resold.

If leases are issued and lease operations are proposed in the future, BLM would conduct project specific NEPA review when an Application for Permit to Drill (APD) or other exploration, development or production project application is submitted. In addition to the stipulations and notices attached to the parcel; requirements outlined in Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development (The Gold Book); and guidelines and Best Management Practices (US DOI and USDA, 2007) would be applied.

Stipulations and/or lease notices would be attached to each offered lease parcel. The stipulations for each alternative are shown under Appendix D, with the parcels to which each stipulation would apply.

2.1. Alternative A- Proposed Action

Under the Proposed Action, 4 parcels covering 4,720 acres in the Bristlecone Field Office would be offered during the July 2023 Competitive Oil and Gas Lease Sale. The lease parcels are located in White River and Railroad Valley, northern Nye County, Nevada.

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 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 the Stipulations Appendix (Appendix D). 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 effects 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.

In addition to the stipulations provided for by the governing LUP (as amended) and BLM policies, Lease Notices have been developed for conservation measures and would be applied on specific parcels as warranted by subsequent IDT review. A BLM interdisciplinary team reviewed all the parcels and applied stipulations and lease notices designed to avoid or minimize impacts to resources.

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 disclose the effects, a Reasonably Foreseeable Development (RFD) Scenario is assumed wherein all nominated parcels will be developed.

2.2. Alternative B-No Action or No Leasing

In accordance with BLM NEPA guidelines H-1790-1, Chapter 6, this EA evaluates a No Leasing Alternative. Alternative B forms a baseline for assessing and comparing the potential impacts of the other alternatives. Under this alternative, no parcels in the Ely District would be offered for lease in July 2023.

Any new oil and gas development would take place on parcels that were leased in other lease sales. Surface management would remain the same and ongoing oil and gas development would continue on surrounding federal, private, and state leases.

2.3. Alternatives Considered but Not Analyzed in Detail

The preliminary parcel list received on November 4, 2022, included 35 proposed parcels for inclusion in the Ely District 2023 Third Quarter Proposed Competitive Oil and Gas Lease Sale. After review of Scoping comments received from November 21st to December 21st, 2022, the 31 parcels located within the Caliente Field Office were not carried forward for analysis due to BLM policy (IM 2023-007 and IM 2023-008).

2.4. Reasonably Foreseeable Development Scenario

A Reasonably Foreseeable Future Development scenario (RFFD) for oil and gas is a long-term projection of oil and gas exploration, development, production, and reclamation activity. The RFFD covers oil and gas activity in a defined area for a specified period of time and provides the basis for the analysis of the environmental effects in Chapter 3 of this document. The RFFD scenario was developed based on past exploration activities and estimates of future exploration and development activity given the potential occurrence of resources (BLM 2007; page 4.18–3).

The RFFD projects a baseline scenario of activity assuming all potentially productive areas can be open under standard lease terms and conditions, except those areas designated as closed to leasing by law, regulation, or executive order. The RFFD provides the mechanism to analyze the effect that discretionary management decisions have on oil and gas activity. The RFFD also provides the basic information that is analyzed in the NEPA document. The RFFD discloses indirect future or potential impacts that could occur once the lands are leased. Prior to any future development, the BLM would require a site-specific NEPA review at the exploration and development stages.

Fluid mineral development potential in the analysis area is based on RFFD scenario for oil and gas developed in conformance with BLM Instruction Memorandum No. 2004–089 (BLM 2004). This analysis is based largely on the reasonably foreseeable development scenarios presented in detail in the fluid mineral report prepared for the RMP/FEIS (ENSR 2004), available at the Ely District Office. Various additional assumptions have been incorporated based on changes in the mineral markets in the recent past. It is impossible to predict with certainty how resource development would occur in the future. The interaction of prices, markets, technology, and environmental concerns all play a role.

The RFFD for the analysis area is based on the geology, oil and gas development history, oil and gas potential, BLM well data, and data from other EAs for oil and gas leases in eastern Nevada.

The RFFD scenario is made without respect to any existing or proposed leasing stipulations and conditions of approval in accordance with BLM guidance. The Proposed Action does not include any surface disturbance, such as exploration, development, production, or final reclamation of oil and gas resources. However, the authorization of oil and gas leasing does convey a right to subsequent exploration and production activities subject to stipulations, restrictions from non-discretionary statutes, COAs, and other reasonable measures required to minimize adverse impacts (CFR 3101.1–2). Therefore, this EA would consider possible impacts from potential indirect effects under RFFD scenarios. The following table summarizes the RFFD assumptions in comparison to this EA extrapolated from the RMP.

Table 2.1 Ely RMP Reasonably Foreseeable Future Development Scenarios (RFFD)

Facility Type	Number of Facilities	Short-term Disturbance (acres)	Long-term Disturbance (acres)
Seismic Survey	30 miles/year	<1000	0
Exploration Well Disturbances	200 wells and 1000 miles of road	5600	590
Small Well Field Developments	40 wells	745	359
Abandoned well pads (small field)	48 wells	178	0
Large Well Field Developments	100 wells	996	432
Abandoned well pads (large field)	60 wells	222	0
Refinery Facilities	1 refinery	65	20
Total		8406	1401

Notes:

Short-term applies to effects occurring in the immediate future and persisting for less than 10 years; long-term applies to effects occurring or lasting beyond 10 years (10–20 years).

Summarized from Table 4.18–2 in the Ely RMP/FEIS (2007, page 4.18–5)

2.4.1. General Assumptions for the RFFD Scenario

The following is a list of general assumptions upon which the reasonably foreseeable development scenarios is based (BLM 2007).

- The RFFD would occur over a span of 20 years.
- There would be no major regulatory changes in federal or state statutes, regulations, policy and guidance that govern the exploration and development of fluid minerals, including lease royalty provisions and lease rental fees.
- Oil prices would remain sufficiently high to stimulate continued exploration and drilling. Recent historic highs in the price of oil may stimulate exploration activity above levels of the recent past. It is possible that higher prices may persist for the next few years. The RFFD is a planning tool that was developed to accommodate the maximum development that could reasonably be expected to occur. However, actual activity levels, as with prices, cannot be predicted with certainty.
- It cannot be predicted at this time how much acreage eventually would be held by production, which is entirely dependent on the discovery of commercial oil and gas fields.
- New field discoveries would be similar in size and surface disturbance to the Trap Springs and Kate Springs oil fields within Railroad Valley.
- The RFFD scenario is made without respect to any existing or proposed leasing stipulations and conditions of approval in accordance with BLM guidance.

- Actual locations of potential exploration wells and field development are unknown. The impacts associated with these activities are likely to occur anywhere within the planning area that is of high, moderate, or even low potential for oil and gas resources.

2.4.2. Exploration Drilling and Production Assumption

Actual locations of potential exploration wells and field development are unknown. The impacts associated with these activities could occur anywhere within the leased parcels that are of high, moderate, or even low potential for oil and gas resources.

The RMP/FEIS assumes a total of 448 wells would be drilled, including small and large field developments and associated abandoned well pads, resulting in total short-term disturbance of approximately 8,400 acres and a long-term (greater than 10 years for producing wells) disturbance of approximately 1,400 acres. Short-term disturbance, as defined for the RFFD scenario, identifies wells to be plugged and abandoned that would be reclaimed immediately after drilling or construction, in accordance with COAs and BMPs. If 448 wells should occur over 20 years, then an average of 22 wells totaling 81 acres of short-term surface disturbance and 33 acres of long-term surface disturbance can be expected per year under the RFFD scenario. Therefore, it is expected that 132 wells should have been drilled since the RMP.

There have been 19 APDs approved by the Ely District over the past 10 years and only 16 have been approved since the ELY RMP was approved in August 2008. Most APD's in the Ely District propose a single well per pad. Additionally, not every APD approved is actually drilled. Therefore, it would be highly speculative that 448 wells would be drilled over the next 9 years, even with advancements in well stimulation techniques.

2.4.3. Exploration Drilling

The RFFD scenario in the Ely District RMP/FEIS (2007) planned for 200 exploration wells over the life of the RMP that could result in 740 acres of short-term surface disturbance. This exploration well estimate does not include numbers for small and large field development or abandoned well pads. Under the RMP scenario, approximately 1,000 miles of new roads would be created to access the well pads. This would add another 4,800 acres of short-term surface disturbance (BLM 2007, Table 4.18–2). If this development and associated disturbance is expected over the course of 20 years, then average development and disturbance per year is expected to include 10 exploration wells and 50 miles of new roads resulting in 37 acres and 240 acres of short term surface disturbance respectively.

Typically, constructing the roads and pads, and drilling the well should take less than six months to complete. If the well is a dry hole, then it is plugged immediately before the drill rig leaves the site. Reclamation of the pad and access road takes place once conditions permit, typically within six months of abandoning the well. If the well becomes a producer, then the access road would remain until the well is no longer producing. The pad would be reclaimed to a smaller size necessary to accommodate production operations.

2.4.4. Production

The average geographic area for a producing oil and gas field in the United States is about 640 acres. Field sizes tend to be smaller in Nevada. There would be 40–acre spacing for wells less than 5,000 feet in depth and 160–acre spacing for wells deeper than 5,000 feet. Most wells drilled in Nevada are deeper than 5,000 feet, so well spacing would probably be 160 acres.

The RFFD scenario in the RMP/FEIS planned for six new production well fields within the Ely District; four small fields and two large fields. The four small well fields would be comprised of 88 wells, 40 being producing wells and the other 48 being plugged and abandoned. The two large well fields would be comprised of 160 wells, 100 being producing wells and the other 60 being plugged and abandoned. This

RFFD also included a total of 56 miles of new access and service roads, and eight miles of new pipelines for the small well fields. The two large well fields would include an overall total of 55 miles of new access and service roads, and 10 miles of new pipelines. A projection of adding a new refinery to the area was also included in this RFFD (BLM 2007, Table 4.18–2).

Well fields can take a number of years to develop and occupy various acreages. Therefore, it cannot be broken down into an average number of well field development per year. Furthermore, the Ely District only has one well field (located in Railroad Valley with only 2 producing wells). It is possible however, that some of the individual parcels nominated, individually or as adjacent leases, could support well field development.

2.4.5. Well Stimulation

Well stimulation may be used to enhance oil recovery of developed wells. Several methods of well stimulation could be used to increase the yield of a well. Hydraulic fracturing is the process of applying high pressure fluids to a subsurface formation via a wellbore, to the extent that the pressure induces fractures in the rock. These fractures allow the oil and gas to migrate, or flow, into the well. Without the fracturing of the formation, the oil and gas contained in the rock would be too tightly trapped to flow into the well. Development of hydraulic fracturing methods and the drilling technology in which it is applied (in particular, long wells drilled horizontally within zones of interest) have enabled production of oil and gas from tight formations formerly not economically feasible.

In order to mitigate potential environmental impacts from hydraulic fracturing methods, the following list of mitigation measures would be required. Additional analysis would be conducted when an APD is submitted to determine the site-specific issues, the need for additional BMPs and COAs, and if hydraulic fracturing can be conducted without causing undue and unnecessary degradation per 43 CFR 3100.

Wells are cased multiple times and sealed with cement between the wellbore and the formation. Well integrity is tested throughout the process.

Drilling and hydraulic fracturing fluids would either be contained in a pit-less system (above ground tanks) or a lined pit. Cuttings could be contained in roll-off boxes for hauling to disposal or surface casing interval cuttings could be spread over the site during reclamation.

Hydraulic fracturing fluids may be returned to the surface as “flowback” or produced water when the well is tested or produced. All recovered fluids are generally handled by one of four methods: (1) underground injection; (2) captured in steel tanks and disposed of in an approved disposal facility; (3) treatment and reuse; or (4) surface disposal pits.

A detailed discussion of hydraulic fracturing is found in Appendix F

Chapter 3. Affected Environment and Environmental Effects

3.1. Analysis Process Overview

Since there is no specific project proposal at the time of a lease sale, likely effects are predicted based on the RFD scenario for Ely. The scenario combines current knowledge with future expectations, and technological advances, as well as standard assumptions. The process used is summarized in this section. This section describes the affected environment, specifically the existing or baseline conditions relevant to the resource, followed by a description of the environmental effects projected to result from the alternative(s). The ID Team considered all resources that various supplemental authorities require BLM to address in EAs, and others deemed appropriate for evaluation. If a resource is not present or would not be affected, the rationale is provided in Table 3.1 and Table 3.2 (below), and the resource is not discussed further.

3.1.1. Methods and Assumptions

An oil and gas lease sale does not involve a specific project proposal, but rather is a first step in making certain lands available for future oil and gas development; therefore, a meaningful analysis of the differences between alternatives requires that the Proposed Action include assumptions based on current exploration and development trends and projections. The assumptions used in this analysis include scenarios which predict the number of wells and amount of surface disturbance likely to occur. Current technologies, methods, and requirements will be applied in the foreseeable future. This analysis also assumes that the Stipulations and Lease Notices are applied to the parcels as the resource requires per the RMP.

3.1.2. Affected Area and Degree of Effects

An EA must analyze and describe the affected area and degree of effects of the proposed action and alternatives on the quality of the human environment. Effects or impacts "means changes to the human environment from the proposed action or alternatives that are reasonably foreseeable and have a reasonably close causal relationship to the proposed action or alternatives, including those effects that occur at the same time and place as the proposed action or alternatives and may include effects that are later in time or farther removed in distance from the proposed action or alternatives" and include "ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic (such as the effects on employment), social, or health effects. Effects may also include those resulting from actions that may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial" (40 CFR 1508.1).

The auctioning of parcels and issuance of oil and gas leases is strictly an administrative action. There would be no effects from issuing leases because leasing does not directly authorize ground disturbing activities; no authorization for surface disturbance would be granted. However, if a lease is sold, the lessee retains certain rights and is responsible for existing disturbance if present. Once a parcel is leased, the lessee has the right to explore for and develop oil and gas resources, subject to standard lease terms and special stipulations pertaining to the conduct of operations. Thus, a lease sale makes the offered parcels available in the affected area and degree of effects (occurring at a later time). This chapter addresses those in the affected area and degree of effects. Additional site-specific NEPA analysis, based on the project, would address effects of any future exploration, development, or production.

3.1.3. Time Period Considered

The time period considered in this analysis is ten years, 2023 to 2033. This represents the initial term for an oil and gas lease, which expires at that time if economic production has not been established. If there is a proposal to develop a lease parcel, then additional project- and site-specific NEPA review would consider effects for a time frame appropriate to that project.

3.1.4. Analysis Area

The term "Analysis Area" refers to the parts of the Bristlecone Field Office in which the lease parcels occur. It includes Railroad Valley, Nye County, Nevada where the lease parcels are located. The air quality and climate change and greenhouse gas analysis in Chapters 3 & 4 discusses potential effects on a larger geographic/area scale.

3.1.5. Supplemental Authorities and Other Resources Considered

To comply with NEPA, BLM is required to address certain elements of the environment that are subject to requirements, called "supplemental authorities," which are specified in statute, regulation or by executive order (BLM 1988, BLM 1997, BLM 2008). Table 3.1 outlines these elements. Other resources considered are shown in Table 3.2. Resources not present or not affected are not addressed further.

Table 3.1 and Table 3.2 below documents the issues evaluation or rationale for dismissal from analysis and identifies sections and appendices for analyzed issues:

Table 3.1 Resources Considered (Supplemental Authorities)

Resources	Not Present	Present/Not Affected	Present/May be Affected	Rationale
Air Quality and Climate Change			√	See Sections 3.2.1 and 4.3.1.
Special Designation Management: ACEC, National Monument, Wild and Scenic Rivers	√			No Special Designation Management areas are located within the affected environment.
Cultural Resources and Heritage Special Designations			√	A Cultural Resources Inventory Needs Assessment was completed for this sale (8111NANV040FY23-05). See Sections 3.3.2 and 4.3.2.
Environmental Justice			√	There is an Environmental Justice population in the Bristlecone Field Office portion of the project area (See Appendix I). See Sections 3.2.12 and 4.3.10 for analysis on Environmental Justice.
Social and Economic Values		√		A socioeconomic analysis of effected and proximal counties was conducted. The likelihood that these four-lease parcels will contribute significantly to the study area's socioeconomic landscape is small. Should these leases move toward exploration and development, further analysis will be warranted. As it is, the sale of these leases offers little socioeconomic impact on the study area.
Soil Resources: Prime and Unique Farmlands	√			No prime and unique farmlands are present within the proposed parcels.

Resources	Not Present	Present/Not Affected	Present/May be Affected	Rationale
Floodplains		√		All parcels fall in areas with flood frequency classifications of none to rare. Regardless of the low flood frequency, a 100-year floodplain No Surface Occupancy stipulation would be applied to the appropriate quarter-quarter sections listed in Appendix D and shown in Appendix A, Maps 4 and 5.
Forests/Woodland Products and Rangelands (Healthy Forest Restoration Act Only)			√	Analysis at the leasing stage is based off the RFFD due to uncertainty regarding future development that would occur. See Appendix J.
Human Health and Safety			√	Analysis at the leasing stage is based off the RFFD due to uncertainty regarding future development that would occur. See Sections 3.2.14 and 4.3.11
Migratory Birds			√	See Sections 3.2.7 and 4.3.5.
Native American Religious Concerns			√	The BLM Ely District Office, Bristlecone Field Office, reached out to federally recognized tribes, in compliance with Executive Order 13175 Consultation and Coordination with Indian Tribal Governments, by sending consultation letters seeking input in March 2023. No potential issues with the Proposed Action have been brought forward at this time. See Sections 3.3.13 and 4.3.10.
Non-Native Invasive and Noxious Species			√	Analysis at the leasing stage is based off the RFFD due to uncertainty regarding future development that would occur. See Appendix J.
Threatened or Endangered Species			√	See Sections 3.2.6 and 4.3.5.

Resources	Not Present	Present/Not Affected	Present/May be Affected	Rationale
Wastes, Hazardous or Solid			√	See Sections 3.2.11 and 4.3.9.
Water Resources: Surface and Ground			√	See Sections 3.2.3 and 4.3.3.
Wetland and Riparian Zones			√	See Sections 3.2.4 and 4.3.4.
Wilderness and Wilderness Study Areas (WSAs)	√			None of the proposed parcels are within a designated Wilderness or WSA.
Lands with Wilderness Characteristics	√			Proposed parcels do not intersect any units found to possess Lands with Wilderness Characteristics.

Table 3.2 Resources Considered

Other Resources	Not Present	Present/Not Affected	Present/May be Affected	Rationale
Fire Management		√		Standard fire management stipulations would be included in any lease sale (see Appendix D).
Vegetation Resources			√	Analysis at the leasing stage is based off the RFFD due to uncertainty regarding future development that would occur. See Appendix J.
Fish and Wildlife			√	See Sections 3.3.5 and 4.3.5.
Special Status Species			√	See Sections 3.3.6 and 4.3.5.

Other Resources	Not Present	Present/Not Affected	Present/May be Affected	Rationale
Wild Horse and Burro			√	Analysis at the leasing stage is based off the RFFD due to uncertainty regarding future development that would occur. See Appendix J.
Paleontological Resources		√		The Paleontological resources lease notice would be included in any lease sale. Analysis at the leasing stage is based off the RFFD due to uncertainty regarding future development that would occur. Paleontological Resources is not an issue and therefore is not analyzed in detail. Any potential impacts from subsequent exploration and development activities would be analyzed in additional, site-specific analysis.
Lands and Realty		√		Parcel NV-2023-07-1529 includes a pending application to authorize a power transmission line . Analysis at the leasing stage is based off the RFFD due to uncertainty regarding future development that would occur. Lands and Realty is not an issue and therefore is not analyzed in detail. Any potential impacts to pre-existing land use authorizations from subsequent exploration and development activities would be analyzed in additional, site-specific analysis.
Travel Management		√		Analysis at the leasing stage is based off the RFFD due to uncertainty regarding future development that would occur. Travel Management is not an issue and therefore is not analyzed in detail. Any potential impacts from subsequent exploration and development activities would be

Other Resources	Not Present	Present/Not Affected	Present/May be Affected	Rationale
				analyzed in additional, site-specific analysis.
Visual Resources Management			√	See Sections 3.3.8 and 4.3.6.
Recreation			√	Analysis at the leasing stage is based off the RFFD due to uncertainty regarding future development that would occur. See Appendix J.
Livestock Grazing			√	See Sections 3.3.9 and 4.3.7.
Geology and Mineral Extraction			√	See Sections 3.3.10 and 4.3.8.

3.2. Environmental Effects of Alternative A and Alternative B

This section describes the affected environment (i.e., the physical, biological, and socioeconomic values and resources) and environmental consequences to resources that could be affected by implementation of Alternative A – Proposed Action or Alternative B –is analysis is tiered to the Ely RMP for each geographic location of the nominated parcels, and the lease parcels included in each alternative are within areas that are open to oil and gas leasing in their respective RMP.

The act of leasing parcels would not cause direct effects to resources because no surface disturbance would occur. The only effects of leasing are the creation of lease rights.

BLM resource specialists prepared this EA to document the analysis of the lease parcels and recommended appropriate stipulations based upon professional knowledge of the areas involved, review of current databases, scientific literature, and file information. At the time of this review, it is unknown whether or not a particular parcel will be sold, and a lease issued. It is also unknown when, where, or if future well sites, roads, and facilities might be proposed; therefore, the types, magnitude and duration of potential impacts cannot be precisely quantified at this time and would vary according to many factors.

The analysis area varies by resource, and generally includes lease parcels of Federal minerals for oil and gas leasing in Nye County, north central Nevada.

The temporal scale of effects includes the 10-year period of a lease term, unless the lease is held by production, in which case the temporal scale is extended to the life of the producing well. If the lease parcels are developed, short-term effects would be stabilized or mitigated rapidly (within two to five years). Long-term effects would be mitigated but are projected to substantially remain for more than five years.

3.2.1. Air Quality and Climate Change

These interrelated resources are combined here for discussion and analysis. Air quality is affected by various natural and anthropogenic factors. Industrial sources such as power plants, mines, and oil and gas extraction activities in Nevada contribute to local and regional air pollution.

3.2.1.1. Affected Environment

Air Quality Ambient air quality depends on concentrations of pollutants in the air. Under the authority of the Clean Air Act (CAA), the Environmental Protection Agency (EPA) has established nationwide air quality standards, known as the National Ambient Air Quality Standards (NAAQS) for six air pollutants. Pollutants for which standards have been set are called criteria pollutants, and include carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM_{10} & $PM_{2.5}$), sulfur dioxide (SO_2) and lead (Pb). 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 considered good. Locations where monitored pollutant concentrations are higher than the NAAQS are designated nonattainment, and air quality can be unhealthy. Two additional pollutants of concern, nitrogen oxides (NO_x) and volatile organic compounds (VOCs), contribute to the formation of ozone in the atmosphere, which is a regulated criteria pollutant.

While the EPA sets the NAAQS and established Federal regulations, many air quality permitting and State Implementation Plan regulatory activities under the CAA are delegated to the state. The Nevada Division of Environmental Protection (NDEP) Bureau of Air Pollution Control and Air Quality Planning (BAPC) is tasked with permitting and maintaining air quality data for Nevada, as well as long-term strategies for air quality improvement.

CAA regulations also control the release of hazardous air pollutants (HAPs): chemicals that are known or suspected to cause cancer or other serious health effects, such as reproductive effects, birth defects, or adverse environmental effects. EPA currently lists 189 compounds as HAPs, some of which, such as benzene, toluene, and formaldehyde, can be emitted from oil and gas development operations. NAAQS have not been set for HAPs, rather HAP emissions are controlled by source type- or industrial sector-specific regulations. Hydrogen sulfide (H_2S) gas is not regulated under the NAAQS or as a HAP. However, it is known to be hazardous, and is monitored for health and safety at oil and gas sites. There has been no H_2S discovered in oil wells drilled in Nevada since required monitoring began in 2000.

The EPA air quality index (AQI) is an index used for reporting daily criteria pollutant levels to the public (https://www.airnow.gov/). The AQI index is one way to evaluate how clean or polluted an area's air is and whether associated health effects might be a concern. The EPA calculates a daily AQI based on local air monitoring data. When the AQI value is between 0 and 50, air quality is categorized as "good" and criteria air pollutants pose little or no risk.

5-year average AQI data representative of Ely District for the years 2017 – 2021 is presented in Table 3.3. The data show that air quality is generally good in the District and that health risk to the public is low.

Table 3.3 Ely District Air Quality as shown by AQI

5-Year Avg Good Days per year		5-Year Avg Moderate Days per year		Unhealthy for Sensitive Groups Days per year		5-Year Avg Unhealthy Days per year		Very Unhealthy Days	Hazardous Days
283.6	79.0%	73.2	20.4%	2.4	0.7%	0.0	0.0%	0.0	0.0

Source - AQI by County data downloaded from https://aqs.epa.gov/aqsweb/airdata/download_files.html#AQI

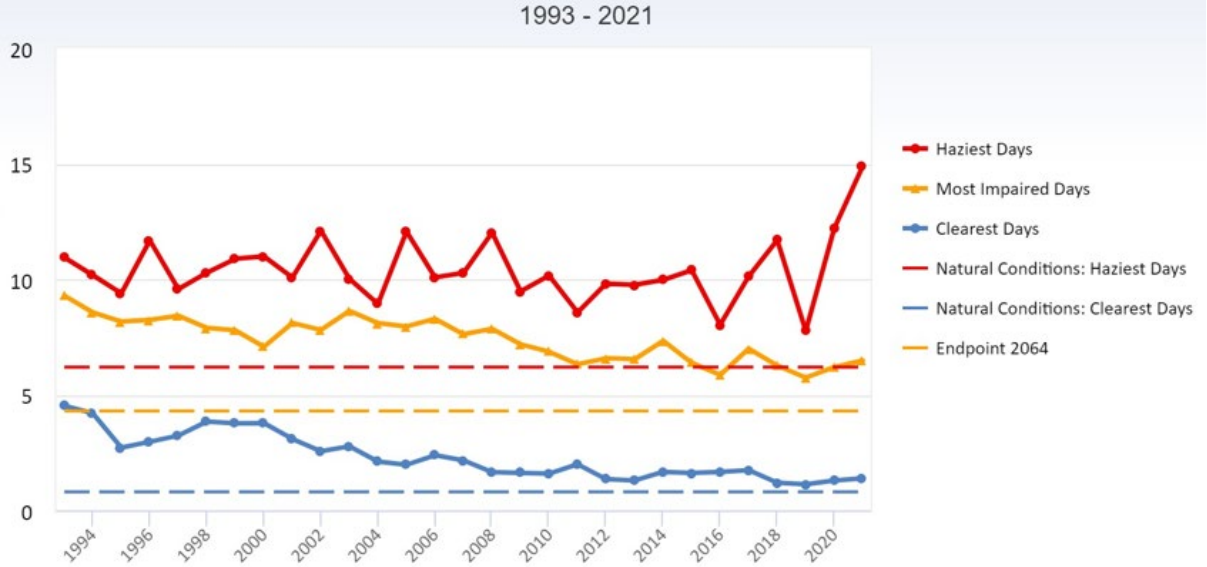
Air Quality Related Values (AQRVs) are resources that are sensitive to air quality and include aesthetic values such as visibility and biological and terrestrial resources such as vegetation, soils, water, and wildlife. Air pollution can affect AQRVs through exposure to elevated atmospheric concentrations, such as O_3 effects to vegetation, impairment of scenic views by pollutant particles in the atmosphere, and deposition of air pollutants, such as sulfur and nitrogen compounds, on the earth's surface through precipitation or dry deposition. AQRVs on federal lands are identified and managed within the respective jurisdictions of several land management agencies in designated Class I areas. Class I areas are afforded specific AQRV protection under the CAA. There are no Class I areas in or adjacent to the analysis area. The nearest Class I areas are the John Muir Wilderness, approximately 112 miles southeast of the southernmost lease parcels, and the Grand Canyon National Park approximately 152 miles south-southeast of the southernmost lease parcel.

Pollutant particles in the atmosphere can impair scenic views, degrading the contrast, colors, and distance an observer is able to see. Visibility is a measure of how far and how well an observer can see a distant and varied scene and can be assessed in terms of the distance that a person can distinguish a large dark object on the horizon; it is measured as the standard visual range in miles. Visibility degradation is primarily due to anthropogenic sulfate, nitrate, particulate emissions, or smoke from wildfires. Air pollutants affecting visibility can be transported hundreds of miles.

A deciview (dv) 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. Because visibility at any one location is highly variable throughout the year, it is characterized by three groupings: the clearest 20% days, average 20% days, and haziest 20% days.

The Great Basin National Park (GBNP), is located within the Ely District and hosts a visibility monitoring station. The figure below shows current visibility trends at GBNP, an area that could potentially be affected from development on proposed lease sale parcels. GBNP is not a Class I area. The haziest days at GBNP are caused by impacts from regional wildfires and windblown dust. These impacts have increased in recent years. The most impaired days shown the impacts of anthropogenic air pollutants including emissions from petroleum development. Visibility impacts form these pollutants has decreased slightly in recent years. GBNP has some of the best visibility recorded in the nation. Even on its haziest days, visual range at GBNP is 50 miles or more (14 deciviews indicates a visual range of 60 miles) and the clearest days at GBNP approach natural visibility conditions (EPA, 2001).

Figure 3.1 ARQV Visibility within the Ely District – Great Basin National Park



Source: http://views.cira.colostate.edu/fed/Reports/Aqrv/BextTrends.aspx

Atmospheric deposition occurs when gaseous and particulate air pollutants are deposited on the ground, water bodies, or vegetation. The pollutants may settle as dust or be washed from the atmosphere in rain, fog, or snow. When air pollutants such as sulfur and nitrogen are deposited into ecosystems, they may cause acidification, or enrichment of soils and surface waters. Atmospheric nitrogen and sulfur deposition may affect water chemistry, resulting in effects to aquatic vegetation, invertebrate communities, amphibians, and fish. Deposition can also cause chemical changes in soils that alter soil microorganisms, plants, and trees. Although nitrogen is an essential plant nutrient, excess nitrogen from atmospheric deposition can stress ecosystems by favoring some plant species and inhibiting the growth of others.

Climate The Ely District is located within the Central Basin and Range ecoregion (Comer et al., 2012). The mean annual temperatures in central Nevada are about 50 degrees Fahrenheit (°F). There is strong surface heating during the day and rapid nighttime cooling because of the dry air, resulting in wide daily ranges in temperature. In the west, the summers are short and hot, but the winters are moderately cold; while in the south the summers are long and hot and the winters short and mild. Long periods of extremely cold weather are rare, primarily because the mountains east and north of Nevada act as a barrier to the intensely cold continental arctic air masses. Very little precipitation occurs to the east of the Sierra Nevada Range, and variations in precipitation are due mainly to differences in elevation and exposure to precipitation-bearing storms (WRCC, 2018).

Climate Change Greenhouse gases (GHGs) became regulated pollutants on January 2, 2011, because of their contribution to global climate change. Future development of lease parcels under consideration could lead to emissions of carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), the three most common GHGs associated with oil and gas development. These GHG emissions would be emitted from leased parcels if developed, and from the consumption of any fluid minerals that may be produced. However, the BLM cannot reasonably determine at the leasing stage whether, when, and in what manner a lease would be explored or developed. The uncertainty that exists at the time the BLM offers a lease for sale includes crucial factors that would affect actual GHG emissions and associated impacts, including but not limited to the future feasibility of developing the lease, well density, geological conditions, development type (vertical, directional, or horizontal), hydrocarbon characteristics, specific equipment used during construction, drilling, production, abandonment operations, production and transportation, and potential regulatory changes over the 10-year primary lease term. Actual development on a lease may

vary from what is analyzed in this EA and may be evaluated through site-specific NEPA review when an operator submits an APD or plan of development to the BLM.

For the purposes of this analysis, the BLM has evaluated the potential effects of the proposed leasing action on climate change by estimating and analyzing potential GHG emissions from projected oil and gas development on the parcels proposed for leasing using estimates based on past oil and gas development and available information from existing development within the State.

Further discussion of climate change science and predicted impacts, as well as the reasonably foreseeable and cumulative GHG emissions associated with BLM's oil and gas leasing actions, are included in the *BLM Specialist Report on Annual Greenhouse Gas Emissions and Climate Trends* (BLM, 2022) (hereinafter referred to as the Annual GHG Report). This report presents the estimated emissions of greenhouse gases attributable to development and consumption of fossil fuels produced on lands and mineral estate managed by the BLM. The Annual GHG Report is incorporated by reference as an integral part of this analysis and is available at https://www.blm.gov/content/ghg/2021 . Additional information on observed and project climate change effects in Nevada is available from the State of Nevada Climate Initiative at https://climateaction.nv.gov/policies/climate-nv/ .

Climate change is a global process that is affected by the sum total of GHGs in the Earth's atmosphere. The incremental contribution to global GHGs from a single proposed land management action cannot be accurately translated into its potential effect on global climate change or any localized effects in the area specific to the action. Currently, global climate models are unable to forecast local or regional effects on resources as a result of specific emissions. However, there are general projections regarding potential impacts on natural resources and plant and animal species that may be attributed to climate change resulting from the accumulation of GHG emissions over time. GHGs influence the global climate by increasing the amount of solar energy retained by land, water bodies, and the atmosphere. GHGs can have long atmospheric lifetimes, which allows them to become well mixed and uniformly distributed over the entirety of the Earth's surface no matter their point of origin. Therefore, potential emissions resulting from the proposed action can be compared to state, national and global GHG emission totals to provide context of their significance and potential contribution to climate change impacts.

Table 3.4 shows the total estimated GHG emissions from fossil fuels at the global, national, and state scales over the last five years. Emissions are shown in million metric tonnes or megatonnes (Mt) per year of carbon dioxide equivalent (CO_2e). Chapter 3 of the Annual GHG Report contains additional information on GHGs and an explanation of CO_2e. State and national energy-related CO_2 emissions include emissions from fossil fuel use across all sectors (residential, commercial, industrial, transportation, and electricity generation) and are released at the location where the fossil fuels are consumed.

Additional information on current state, national, and global GHG emissions as well as the methodology and parameters for estimating emissions from BLM fossil fuel authorizations and cumulative GHG emissions is included in the Annual GHG Report (see Chapters 4, 5, and 6).

Table 3.4 Global and U.S. GHG Emissions 2015 - 2020 (Mt CO_2e/yr)

Scale	2016	2017	2018	2019	2020
Global	36,465.6	36,935.6	37,716.2	37,911.4	35,962.9
U.S.	5,077.0	5,005.5	5,159.3	5,036.0	4,535.3
Nevada	44.3	44.1	45.4	46.8	43.1

Source: Annual GHG Report, Chap. 6, Table 6-1 (Global and U.S.) and Nevada Statewide Greenhouse Gas Emissions Inventory and Projections, 2022 Report, www.ndep.nv.gov/uploads/air-pollutants-docs/ghg_report_2022.pdf
Mt (megatonne) = 1 million metric tons

The continued increase of anthropogenic GHG emissions over the past 60 years has contributed to global climate change impacts. A discussion of past, current, and projected future climate change impacts is described in Chapters 8 and 9 of the Annual GHG Report. These chapters describe currently observed climate impacts globally, nationally, and in each State, and present a range of projected impact scenarios depending on future GHG emission levels. These chapters are incorporated by reference in this analysis.

Environmental Consequences

Proposed Action

While the leasing action does not directly result in development that will generate air emissions, emissions from potential future development of the leased parcels are reasonably foreseeable and can be estimated for the purposes of this lease sale. There are four general phases of post-lease development that would generate air pollutant emissions: 1) well development (well site construction, well drilling, and well completion), 2) well production operations (extraction, separation, gathering), 3) mid-stream (refining, processing, storage, and transport/distribution), and 3) end-use (combustion or other uses) of the fuels produced. While well development and production operation emissions occur on-lease and the BLM has program authority over these activities, mid-stream and end-use emissions typically occur off-lease where the BLM has no program authority. Off-lease criteria pollutant and HAP emissions and their impacts are monitored, regulated and accounted for by the EPA and delegated State and Local agencies under the Clean Air Act, and are not analyzed further in this Environmental Assessment.

Air Quality

Emissions inventories at the leasing stage are imprecise due to uncertainties including the type of mineral development (oil, gas, or both), scale, and duration of potential development, types of equipment (drill rig engine tier rating, horsepower, fuel type), and the mitigation measures that a future operator may propose in their development plan. In order to estimate reasonably foreseeable on-lease emissions at the leasing stage, the BLM uses estimated well numbers based on State data for past lease development combined with per-well drilling, development, and operating emissions data from representative wells in the area. The pattern of petroleum development in the Ely District differs in some regards from what BLM has experienced in other states. For example, to date no commercial gas resources have been discovered in Nevada and little associated gas has been reported. In addition, drilling activity levels are low and have declined. Data on petroleum development on Public Lands in Nevada is presented in Table 3.5.

Table 3.5 BLM Nevada Petroleum Lease Data

Summary of Onshore Oil & Gas Statistics in Nevada											
10-Years of Data	**FY 2012**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**FY 2021**	**10-Year Totals**
Total Number of Leases in Effect	1,927	1,881	1,696	1,214	627	426	498	518	482	413	NA
Total Number of Producing Leases on Federal Lands	35	31	32	36	37	36	36	36	37	37	NA
Total Number of Producing Acres on Federal Lands	23,637	21,637	22,077	26,201	27,001	24,437	24,437	24,437	26,927	25,281	NA
Total Number of New Leases Issued During the Year	288	114	127	73	34	90	126	105	35	15	1007
Total Number of APDs approved by Year on Federal Lands	2	7	7	4	3	3	2	3	3	1	35
Total Number of Wells Started (Spud) During the Year on Federal Lands	1	3	3	1	0	0	2	1	1	0	12
Nevada Statewide Oil Production (bbl)	368,720	336,490	314,158	291,000	273,787	281,521	254,663	264,515	237,328	219,519	Change -40%

APD: Application for a Permit to Drill.

Sources: https://www.blm.gov/programs-energy-and-minerals-oil-and-gas-oil-and-gas-statistics, https://revenuedata.doi.gov/query-data/?dataType=Disbursements&groupBy=state&source=GOMESA%20offshore#

The RFFD used as a basis for this analysis assumes that approximately 22 wells causing 81 acres of surface disturbance could be drilled per year, for a total of 220 wells over the next ten years. The figures for number of wells and disturbance are irrespective of the number of parcels or acreage being offered. This estimate is highly conservative because the data in Table 3-5 show that in BLM Nevada over the past 10-year period:

- the number of total leases and leased acreage have decreased;
- the number of producing acres and leases have stay nearly static;
- a total of 1,007 new leases were issued which corresponded to approval of 35 APDs and the start of 12 new wells; and,
- this leasing, exploration, and development activity was associated with an approximately 40% decrease in the annual amount of oil produced over same 10-year period.

For the purposes of emission estimation, BLM will assume that the projected 220 wells drilled will lead to 20 producing oil wells with low gas production. The data in Table 3.5 show that the number of wells drilled in a given year are only weakly correlated with the number of new leases issued that year. This means that the 220 projected wells drilled and 20 wells coming into production analyzed here represent the cumulative total number of new wells and associated air emissions related to all lease sales held in Ely District during the 10-year analysis period.

Table 3.6 Estimated Maximum Year, Average Year, and Production Life Criteria and Hazardous Air Pollutant Emissions (tons per year) with Context.

Activity	PM_{10}	$PM_{2.5}$	VOC	NO_X	CO	SO_2	HAPs
Max Year	250.4	32.6	642.8	215.5	193.0	19.9	74.3
Average Year	185.9	24.2	492.8	159.8	154.1	16.6	56.9
Production Life Total	5,575.7	724.6	14,784.9	4,794.3	4,623.6	496.5	1,707.8
Context							
Ely District Region Annual Total[1]	43,282	5,776	137,261	12,515	41,624	51	27,953
Ely District Region Production Life Total	1,298,460	173,280	4,117,830	375,450	1,248,720	1,530	838,597

1 - Total annual pollutant emissions for Lincoln, Nye, and White Pine Counties reported in the 2017 NEI (https://www.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data#dataq)

The amount of oil or gas that may be produced if the offered parcels are developed is unknown. For purposes of estimating production and end-use emissions, potential wells are assumed to produce oil and gas in similar amounts as existing nearby wells. While the BLM has no authority to direct or regulate the end-use of the products, for this analysis, the BLM assumes all produced oil or gas will be combusted (such as for domestic heating or vehicle fuel). Criteria pollutant emissions related to transportation, refining and combustion (or mid-stream and end uses) of Nevada-produced oil and gas are regulated; permitted; and accounted for in monitoring, modelling, inventories, and projections prepared by the EPA and the CAA delegated state and local agencies in Nevada and Utah where most of the fuels produced from Nevada petroleum are expected to be used. It is reasonable to expect that potential air resource impacts related to use of any petroleum products produced in Ely District would be mitigated through established CAA regulatory and enforcement programs in the areas where they are used.

Design Constraints

The BLM does look to mitigate criteria pollutants and HAPS via lease stipulations and notices and further NEPA actions throughout the lease process. Air quality control measures may be warranted and if so, would be imposed at the APD stage (such as mitigation measures, best management practices (BMPs), and an air emissions inventory). The BLM would do this in coordination with the NDEP, BAPC, EPA, and other agencies that have jurisdiction 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 emissions inventory and future modeling studies or other analysis or changes in regulatory standards.

Greenhouse Gases (GHG) and Climate Change

Emissions inventories at the leasing stage are imprecise due to uncertainties including the type of mineral development (oil, gas, or both), scale, and duration of potential development, types of equipment (drill rig engine tier rating, horsepower, fuel type), and the mitigation measures that a future operator may propose in their development plan. In order to estimate reasonably foreseeable on-lease emissions at the leasing stage, the BLM uses estimated well numbers based on State data for past lease development combined with per-well drilling, development, and operating emissions data from representative wells in the area. The amount of oil or gas that may be produced if the offered parcels are developed is unknown. For purposes of estimating production and end-use emissions, potential wells are assumed to produce oil and gas in similar amounts as existing nearby wells. While the BLM has no authority to direct or regulate the end-use of the products, for this analysis, the BLM assumes all produced oil or gas will be combusted (such as for domestic heating or energy production). The BLM acknowledges that there may be additional

sources of GHG emissions along the distribution, storage, and processing chains (commonly referred to as midstream operations) associated with production from the lease parcels. These sources may include emissions of methane (a more potent GHG than CO_2 in the short term) from pipeline and equipment leaks, storage, and maintenance activities. These sources of emissions are highly speculative at the leasing stage, therefore, the BLM has chosen to assume that mid-stream emissions associated with lease parcels for this analysis will be similar to the national level emissions identified by the Department of Energy's National Energy Technology Laboratory (NETL, 2009) (NETL, 2019).

The emission estimates calculated for this analysis were generated using the assumptions previously described above using the BLM Lease Sale Emissions Tool. Emissions are presented for each of the four phases of post-lease development described above.

- Well development emissions occur over a short period and may include emissions from heavy equipment and vehicle exhaust, drill rig engines, completion equipment, pipe venting, and well treatments such as hydraulic fracturing.
- Well production operations, mid-stream, and end-use emissions occur over the entire production life of a well, which is assumed to be 30 years for this analysis based on the productive life of a typical oil/gas field.
- Production emissions may result from storage tank breathing and flashing, truck loading, pump engines, heaters and dehydrators, pneumatic instruments or controls, flaring, fugitives, and vehicle exhaust.
- Mid-stream emissions occur from the transport, refining, processing, storage, transmission, and distribution of produced oil and gas. Mid-stream emissions are estimated by multiplying the estimated ultimate recovery (EUR) of produced oil and gas with emissions factors from NETL life cycle analysis of U.S. oil and natural gas. Additional information on emission factors can be found in the Annual GHG report (Chapter 4, Table 4-7 and 4-9).
- For the purposes of this analysis, end-use emissions are calculated assuming all produced oil and gas is combusted for energy use. End-use emissions are estimated by multiplying the EUR of produced oil and gas with emissions factors for combustion established by the EPA (Tables C-1 and C-2 to Subpart C of 40 CFR § 98). Additional information on emission factors and EUR factors can be found in the Annual GHG Report (Chapter 4).

Table 3.7 lists the estimated annual and production life direct (well development and production operations) and indirect (mid-stream and end-use) GHG emissions in metric tons (tonnes) for the RFD.

Table 3.7 Estimated Direct and Indirect GHG Emissions from the Lease Parcels on an annual and life of lease basis (Metric Tonnes)

	CO_2	CH_4	N_2O	CO_2e (100-yr)	CO_2e (20-yr)
Max Year	115,155	509.45	0.715	130,532	157,380
Average Year	58,931	379.83	0.344	70,344	90,361
Life of Lease	1,479,543	6,967.71	8.679	1,689,550	2,056,748

Source: BLM Lease Sale Emissions Tool

Table 3.8 presents a breakdown of estimated direct and indirect GHG emissions in metric tons (tonnes) for the RFD over the average 30-year production life of the lease.

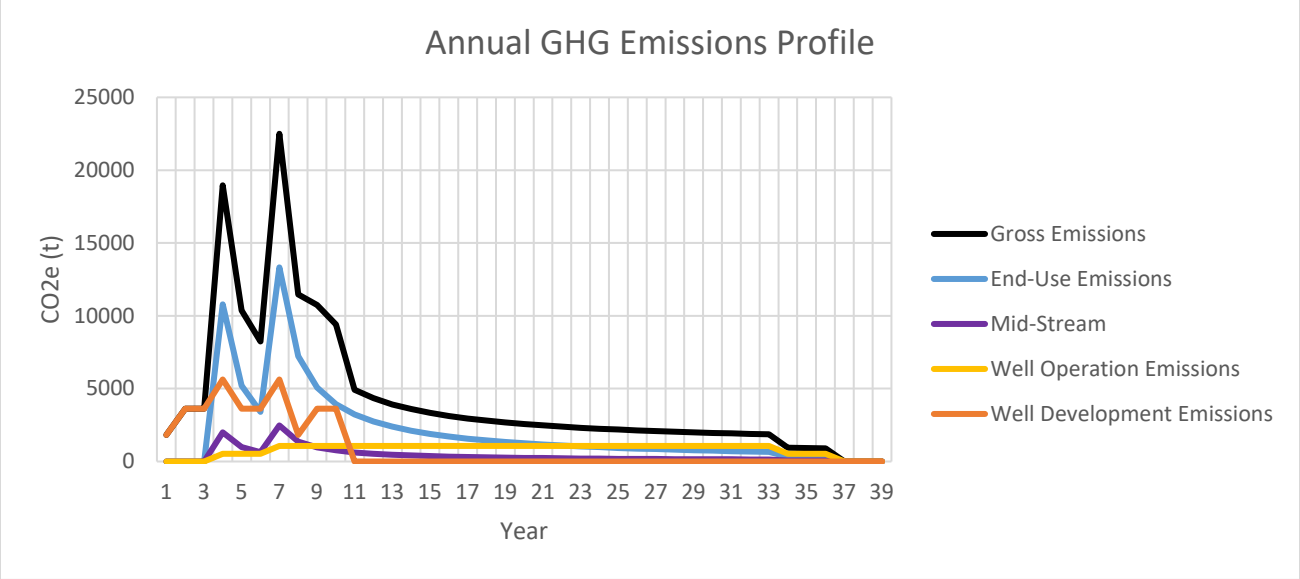
Table 3.8 Estimated Production Life GHG Emissions from Well Development, Well Production Operations, Mid-stream, and End-use (Tonnes)

Activity	CO_2	CH_4	N_2O	CO_2e (100-yr)	CO_2e (20-yr)
Well Development	321,801	2,717.83	1.942	403,322	546,552
Production Operations	225,828	3,166.89	0.565	320,356	487,251
Mid-Stream	123,423	1,058.15	1.881	155,469	211,234
End-Use	808,491	24.84	4.291	810,403	811,712
Total	1,479,543	6,967.71	8.679	1,689,550	2,056,748

Source: BLM Lease Sale Emissions Tool

GHG emissions vary annually over the production life of a well due to declining production rates over time. Figure 3.2 shows the estimated GHG emissions profile over the production life of a typical lease including well development, well production operations, mid-stream, end-use, and gross (total of well development, well production, mid-stream, and end-use) emissions.

3.2 Estimated GHG Emissions Profile of the Proposed Action over the Life of a Lease



Source: BLM Lease Sale Emissions Tool

To put the estimated GHG emissions for this lease sale in a relatable context, potential emissions that could result from development of the lease parcels for this sale can be compared to other common activities that generate GHG emissions and to emissions at the state and national level. The EPA GHG equivalency calculator can be used (https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator) to express the potential average year GHG emissions on a scale relatable to everyday life. For instance, the projected average annual GHG emissions from potential development of the subject leases are equivalent to 15,160 gasoline-fueled passenger vehicles driven for one year, or the emissions that could be avoided by operating 19 wind turbines as an alternative energy source or offset by the carbon sequestration of 83,743 acres of forest land.

Table 3.9 compares emission estimates over the 30-year production life compared to the 30-year projected Federal emissions in the state and nation from existing wells, the development of approved APDs, and emissions related to reasonably foreseeable lease actions.

Table 3.9 Comparison of the RFD Production Life GHG Emissions to other Federal Oil and Gas Emissions

Reference	Mt CO_2e (30-yr)	Life of Lease % of Reference
Life of Lease	1.690	100.000%
NV Reasonably Foreseeable Short-Term Onshore Federal (O&G)	2.74	61.7%
NV Projected Long-Term Onshore Federal (O&G)	4.83	35.0%
U.S. Reasonably Foreseeable Short-Term Onshore Federal (O&G)	4,614.81	0.037%
Projected Long-Term Onshore Federal (O&G)	13,560.24	0.012%

1- Foreseeable Federal short-term and long-term emissions come from the BLM Specialist Report on Annual Greenhouse Gas Emissions. Tables ES-3 and ES-4.

2 - Short-term projections are based on existing production, approved permits, and potential new leases.

3 - Long-term projections are based on the projections from the U.S. Energy Information Administration's energy outlook.

Compared to emissions from other existing and foreseeable short-term Federal oil and gas development, the production life emissions for the RFFD is 35% to 62% of Federal fossil fuel authorization emissions in the Nevada and about 0.037% of Federal fossil fuel authorization emission in the nation (EPA , 2022). If foreseeable "long-term" Federal oil and gas development and production remains a constant percentage of EIA projected energy demand, then the estimated emissions from the life of leases in the Proposed Action is approximately 0.012% of total emissions in the nation the next 30 years. In summary, potential GHG emissions from the Proposed Action could result in GHG emissions of 1.69 MT CO_2e over the production life of the RFFD.

The "social cost of carbon", "social cost of nitrous oxide", and "social cost of methane" – together, the "social cost of greenhouse gases" (SC-GHG) are estimates of the monetized damages associated with incremental increases in GHG emissions in a given year. Such analysis should not be construed to mean a cost determination is necessary to address potential impacts of GHGs associated with specific alternatives. These numbers were monetized; however, they do not constitute a complete cost-benefit analysis, nor do the SC-GHG numbers present a direct comparison with other impacts analyzed in this document SC-GHG is provided only as a useful measure of the benefits of GHG emissions reductions to inform agency decision-making. For Federal agencies, the best currently available estimates of the SC-GHG are the interim estimates of the social cost of carbon dioxide (SC-CO2), methane (SC-CH4), and nitrous oxide (SC-N2O) developed by the Interagency Working Group (IWG) on the SC-GHG. Select estimates are published in the Technical Support Document (IWG 2021) and the complete set of annual estimates are available on the Office of Management and Budget's website.

The SC-GHGs associated with estimated emissions from future potential development of the lease parcels are reported in Table 3.10. These estimates represent the present value (from the perspective of 2023) of future market and nonmarket costs associated with CO_2, CH_4, and N_2O emissions from potential well development and operations, and potential end-use, as described in Subsection 1.2.1. Estimates are

calculated based on IWG estimates of social cost per metric ton of emissions for a given emissions year and BLM's estimates of emissions in each year. They are rounded to the nearest $1,000. The estimates assume development will start in 2023 and end-use emissions complete in 2060, based on experience with previous lease sales.

Table 3.10 SC-GHGs Associated with Future Potential Development

	Social Cost of GHGs (2020 $)			
	Average Value, 5% discount rate	**Average Value, 3% discount rate**	**Average Value, 2.5% discount rate**	**95th Percentile Value, 3% discount rate**
Development and Operations	$10,680,000	$35,416,000	$51,933,000	$103,870,000
Mid-Stream and End-Use	$12,657,000	$46,511,000	$69,891,000	$140,365,000
Total	**$23,337,000**	**$81,927,000**	**$121,824,000**	**$244,235,000**

As detailed in the Annual GHG Report (BLM, 2022), which the BLM has incorporated by reference, the BLM also looked at other tools to inform its analysis, including the MAGICC model (see Section 7.0 of the Annual GHG Report). This model run suggests that "30-plus years of projected federal emissions would raise average global surface temperatures by approximately 0.0158 °C., or 1% of the lower carbon budget temperature target." As this is an assessment of what BLM has projected could come from the entire Federal fossil fuel program, including the projected emissions from the proposed action, over the next 30 years, the reasonably foreseeable lease sale emissions contemplated in this EA are not expected to substantially affect the rate of change in climate effects, bring forth impacts that are not already identified in existing literature, or cause a change in the magnitude of impacts from climate change at the state, national, or global scales.

Mitigation Strategies

GHG emissions contribute to changes in atmospheric radiative forcing resulting in climate change impacts. GHGs act to contain solar energy loss by trapping longer wave radiation emitted from the Earth's surface and act as a positive radiative forcing component. The buildup of these gases has contributed to the current changing state of the climate equilibrium towards warming. Chapters 8 and 9 of the Annual Report provides a detailed discussion of climate change science, trends, and impacts. The relationship between GHG emissions and climate impacts is complex, but a project's potential to contribute to climate change is reduced as its net emissions are reduced. When net emissions approach zero, the project has little or no contribution to climate change. Net-zero emissions can be achieved through a combination of controlling and offsetting emissions. Emission controls (e.g., vapor recovery devices, no-bleed pneumatics, leak detection and repair, etc.) can substantially limit the amount of GHGs emitted to the atmosphere, while offsets (e.g., sequestration, low carbon energy substitution, plugging abandoned or uneconomical wells, etc.) can remove GHGs from the atmosphere or reduce emissions in other areas. Chapter 10 of the Annual Report provides a more detailed discussion of GHG mitigation strategies.

Several Federal agencies work in concert to implement climate change strategies and meet U.S. emissions reduction goals all while supporting U.S. oil and gas development and operations. The EPA is the Federal agency charged with regulation of air pollutants and establishing standards for protection of human health and the environment. The EPA has issued regulations that will reduce GHG emissions from any development related to the proposed leasing action. These regulations include the New Source Performance Standard for Crude Oil and Natural Gas Facilities (49 CFR 60, subpart OOOOa) which

imposes emission limits, equipment design standards, and monitoring requirements on oil and gas facilities. A detailed discussion of existing regulations and Executive Orders that apply to BLM management of federal lands as well as current Federal and state regulations that apply to oil and gas development and production can be found in Chapter 2 of the Annual Report.

The majority of GHG emissions resulting from federal fossil fuel authorizations occur outside of the BLM's authority and control. These emissions are referred to as indirect emissions and generally occur off-lease during the transport, distribution, refining, and end-use of the produced federal minerals. The BLM's regulatory authority is limited to those activities authorized under the terms of the lease, which primarily occur in the "upstream" portions of natural gas and petroleum systems. This decision authority is applicable when development is proposed on public lands and the BLM assesses the specific location, design and plan of development. In carrying out its responsibilities under NEPA, the BLM has developed Best Management Practices (BMPs) designed to reduce emissions from field production and operations. BMPs may include limiting emissions from stationary combustion sources, mobile combustion sources, fugitive sources, and process emissions that may occur during development of the lease parcel. Analysis and approval of future development may include the application of BMPs within BLM's authority, included as Conditions of Approval, to reduce or mitigate GHG emissions. Additional measures proposed at the project development stage may be incorporated as applicant-committed measures by the project proponent or added to necessary air quality permits. Additional information on mitigation strategies, including emissions controls and offset options, are provided in Chapter 10 of the Annual GHG Report.

No Action Alternative

Under the No Action Alternative, the BLM would not offer any of the nominated parcels in this lease sale. However, in the absence of a Land Use Plan Amendment closing the lands to leasing, they could be considered for inclusion in future lease sales. Although no new GHG emissions associated with new Federal oil and gas development for the subject leases would occur under the No Action Alternative in the foreseeable future, the cumulative demand for energy is not expected to differ regardless of BLM decision-making (EIA, 2020). The BLM has no information regarding what energy source would replace petroleum if oil and gas development decreased or was ended in Nevada. Although the change in emissions compared to typical oil and gas development could range from a 98.5% decrease if hydroelectricity is substituted to a 210% increase if coal is substituted, see Table 10-3 in Section 10.0 of the Annual Report (BLM, 2022). Over the past decade the increasing mix of natural gas has contributed to lower emissions as it has replaced energy produced from coal. In 2022, high prices for natural gas and demand exceeding supply have resulted in some countries reactivating or delaying planned closures of coal fired power plants (Reuters, 2022). In the future, renewable energy is anticipated to become a larger part of the U.S. energy mix and reducing energy related carbon emissions. It has been estimated that with a 35% integration of wind and solar energy into the Western United States electric grid, there would be an additional 25-45% reduction in carbon emissions (BLM 2022). Because petroleum production would likely continue in Ely District whether or not the proposed RFD scenario was established, BLM estimated that the SC-GHG estimates provided in Table 3.10 are representative of the No Action Alternative.

3.2.2. Cultural Resources

Affected Environment

Cultural resources include, but are not limited to, rock art; utilized rock shelters and caves; prehistoric habitation sites, camp sites, and specialized activity areas; and historic cemeteries, mines, town sites and dwellings. The cultural landscape on the Ely District provides evidence of a long history of human occupation. The earliest commonly accepted time frame for prehistoric human presence in Nevada is approximately 10,000 to 11,000 years before present. The region has been consistently, though not densely, populated up to the present day.

The parcels being analyzed for lease under this EA are located in Railroad Valley and White River Valley. In the Railroad Valley parcel (NV-2023-06-6966), five cultural resource inventories have been completed covering less than one percent of the parcel. No cultural resources were identified during these inventories; however, a total of 13 sites are known within one mile of the parcel. In White River Valley, a group of three parcels (NV-2023-06-1529; NV-2023-06-1531; NV-2023-06-6916) has had no cultural inventory completed. In fact, the nearest cultural inventory to these parcels is three miles away. In general, the prehistoric and historic cultural landscape in these valleys includes artifacts, features, and sites. These evidence classes relate to cultural affiliation; prehistoric technology, subsistence systems, and settlement patterns; and historic mining, ranching, and agriculture.

Environmental Effects

Any project has an effect on cultural resources if the project alters any of the characteristics or criteria that may qualify a cultural property for inclusion on the National Register of Historic Places (NRHP) or otherwise affects a cultural property's legally protected status. Impacts to cultural properties are considered adverse if the effect diminishes the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Negative or adverse effects can include, but are not limited to, the following: physical destruction of, or damage to, all or part of a property; alteration of a property (e.g., restoration, rehabilitation, stabilization); removal of a property from its historic location; or, transfer, lease, or sale of property out of federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation (2008 Ely District RMP).

Proposed Action

The Proposed Action to lease oil and gas parcels does not entail ground disturbing activities as part of the undertaking. Therefore, this undertaking would not result in direct impacts to cultural resources. All ground disturbing actions associated with the development of the Railroad Valley parcel and the White River Valley parcels after they have been sold would require additional NEPA and NHPA Section 106 compliance, which may include a Class III or Reconnaissance survey analysis, consultation, and mitigation. Lease Notices and Stipulations are found in Appendix C. Notices are included with all parcels, and stipulations are also included with parcels that have known NRHP-eligible cultural resource sites.

The Railroad Valley parcel and the White River Valley parcels have not been thoroughly ground surveyed and all development proposals will be analyzed by the cultural resources specialist to determine the level of survey to be completed. It should be expected that undocumented NRHP-eligible sites may be discovered when the surveys are completed. All Lease Sale parcels would come with a Notice of possible National NRHP-eligible sites present and mandate an additional site-specific EA, including NHPA Section 106 compliance, before any ground disturbance is authorized.

No Action Alternative

The No Action Alternative would not impact cultural resources. Activities on currently leased parcels adjacent to the proposed parcels would remain on-going as permitted on surrounding federal, state, and private lands.

3.2.3. Water Resources: Surface and Ground

Affected Environment

Regulatory Background

The Nevada Division of Environmental Protection (NDEP) monitors water quality in Nevada. NDEP has established water monitoring points within the hydrographic regions of Nevada. At these monitoring points, NDEP specifies the Nevada Water Quality Standards and makes them available in Nevada Administrative Code NAC 445A.1242. These standards apply to all surface water in the watershed

upstream from the monitoring point. NDEP also oversees groundwater quality by laying out the standards required for remediation of groundwater contamination.

The 2008 Ely District Resource Management Plan (RMP) requires that authorized activities on public lands do not degrade water quality. This includes compliance with the federal Clean Water Act and Nevada Water Pollution Control Regulations (Nevada Revised Statute NRS 445A). RMP objective WR-2 also requires the integration of land health standards, BMPs, and appropriate mitigation measures into authorized activities to ensure water quality meets Nevada requirements and meets the BLM water quality management objectives laid out in BLM Manual 7240 – Water Quality Manual. Additionally, any water used for exploration or production of oil and gas resources would need to comply with the water laws of Nevada and with the water rights guidelines laid out in BLM Manual 7250 – Water Rights Manual. The State of Nevada is the ultimate authority over Nevada water laws which are administered through the Nevada Division of Water Resources (NDWR) and whose compliance therewith is mandatory to ensure that water extracted for exploration and development purposes does not to impact the rights of senior water right holders.

Groundwater Resources

Groundwater in Nevada comes from water stored in aquifers, which are geologic units capable of transmitting water at rates that are economically feasible. In eastern Nevada, groundwater sources originate in aquifers contained in widespread geologic units composed of alluvium, carbonate, and volcanic rocks (Welch et al., 2007). These units store water that has infiltrated from precipitation falling on hydrographic basins, which are the water resource management units used by NDWR. The parcels being analyzed for lease under this EA are located in Railroad Valley Northern Part (Hydrographic Basin 173B) and White River Valley (Hydrographic Basin 207). Each basin has a perennial yield, which is the volume of groundwater in acre-feet per year (afy) that can be withdrawn from a basin without exceeding the long-term annual natural recharge. These volumes were calculated between 1963 and 1975 during a cooperative reconnaissance study between NDWR and the U.S. Geological Survey (Table 3.11).

NDWR issues groundwater rights to applicants seeking to use groundwater which yields a groundwater appropriation volume for the basin. When the appropriation volume exceeds that of the perennial yield, the basin is said to be over-appropriated. The Nevada State Engineer (NSE) at NDWR has issued orders in over-appropriated basins to designate the basin if conditions are such that groundwater resources are being depleted at rates that outpace annual recharge. Following a basin designation, the NSE has the additional authority to issue appropriations only for preferred uses. Examples of preferred uses include water for municipal, domestic, industrial, and agricultural applications. In this analysis, only Basin 207 has been designated under NSE Order O-1219 which currently does not name any preferred uses (NDWR, 2023).

Table 3.11 Hydrographic Basin Summary.

Basin Number	Basin Name	Parcel Number (s) (All numbers follow the prefix NV-2023-06)	Designated Basin (Y/N)	Perennial Yield (afy)	Groundwater Appropriations (afy)
173B	Railroad Valley	6966 (northern parcel)	N	75,000	32,000
207	White River Valley	1529, 1531, 6916 (southern parcels)	N	6,000	4,719

The parcels offered under this lease consist of a southern group of parcels in White River Valley and a single parcel approximately 40 miles to the northwest in Railroad Valley (Table 3.11). Most of the groundwater resources within a 10-mile radius around the northern parcel and a 13-mile radius around the southern parcels consist of named and unnamed wells and springs on both private property and public land (Appendix A, Map 6 and 7). These 10-mile and 13-mile distances (buffers) were chosen because this would provide buffers around the parcels that would encompass water resources out to a cautious distance that could potentially be affected in the future by long-term oil and gas production were this to go forward on the parcels. The larger 13-mile buffer around the southern parcels was increased relative to that around the northern parcels to reflect the larger southern parcels area.

Surface Water Resources

Surface water resources in the analysis area include perennial, intermittent and ephemeral streams, and constructed impoundments (reservoirs). A total of approximately 6.5 miles of perennial surface water exists between locations six miles to the west of the northern parcel and five miles to the northeast within the 10-mile buffer (Appendix A, Map 6). Approximately 12 miles of perennial surface water exists in the Wayne Kirch Wildlife Management Area about 10 miles north of the southern parcels (Appendix A, Figure Map 7). In both cases, the perennial surface waters extend outside the buffers. Several unnamed reservoirs have been built within the northern and southern buffers.

Environmental Effects

Proposed Action

Groundwater Resources

Potential impacts to groundwater resources would occur only in the event a lessee submits an Application for Permit to Drill (APD) on any given parcel. The parameters of a future APD components such as drilling methods and drill rig types, proposed methods of water attainment, fuel storage methods, personnel and vehicle requirements, and an array of other factors are unknown at this stage of the process. Thus, an exact analysis of those environmental impacts would take place under a separate NEPA document based the APD contents the lessee presents at the time of submission.

Impacts to groundwater resources that could occur following an APD approval include introduction of drilling fluids into groundwater, contamination of groundwater from petroleum and other chemicals

through spills, well casing leaks, pipeline leaks, and loss of hydraulic fracturing (HF) fluids into groundwater during HF operations. Similarly, improper construction and management of evaporation pits can impact ground water quality through leakage and leaching. Lowering of the groundwater table from groundwater pumping for exploration and production can impact local groundwater wells and associated water rights and can impact groundwater-dependent ecosystems that support a wide range of wildlife and aquatic species.

Authorization of the proposed projects would require compliance with local, state, and federal directives, regulations, permitting, and stipulations that relate to groundwater protection, as well as federal and State of Nevada guidelines for hydraulic fracturing. These include strict drill casing cementation and sealing requirements to prevent leakage into groundwater and communication along the drill bore between water-bearing geologic units. To guard against impacts to groundwater resources, the BLM would work with the permittee to develop site-specific conditions of approval and design features at the APD stage.

Surface Water Resources

Impacts to surface water resources that could occur following an APD approval include alterations to the hydrologic regime such as increased sediment loads during runoff events, increased erosion during construction phases, and alteration of overland flow patterns and groundwater recharge rates from clearing, grading, and soil stockpiling activities. Hydrocarbons and mobile chemicals on the surface associated with development projects could be delivered along with sediments into natural drainage channels and delivered downstream.

Implementation of BMPs along with compliance with state and federally imposed sedimentation and runoff control measures would be required to effectively prevent project-related transport and delivery of sediments or fluids that may impair surface water resources. To guard against these impacts, the BLM would work with the permittee to develop site-specific conditions of approval and design features at the APD stage.

No Action Alternative

The No Action Alternative would create no additional impacts to surface and groundwater resources in the analysis area outside that occurring under current management. Activities on areas adjacent to the proposed parcels would remain on-going as permitted on surrounding federal, state, and private lands.\

3.2.4. Wetlands and Riparian Zones

Affected Environment

Wetlands are defined as areas that are intermittently to permanently inundated and support vegetation adapted to soils saturated by surface or ground water. Examples of wetlands include marshes, swamps, and bogs. Riparian areas are also characterized by wet soils and support moisture-adapted vegetation but experience greater fluctuation in soil moisture levels. Thus, riparian areas are considered transitional zones between wetlands and drier upland areas. Examples of riparian zones include cottonwood and willow forests along streams banks with associated understory riparian vegetation (i.e. lotic riparian areas), and riparian vegetation around slow-moving spring water sources and along lakeshores (i.e., lentic riparian areas).

Regional mapping of wetlands does not distinguish specifically between wetlands and riparian areas, so this analysis will use the term “wetlands” to include wetlands and riparian zones. There are over 8,000 wetland acres mapped within the northern and southern buffers, approximately 3,400 acres of which lie between 7 – 10 miles to the south and southwest of the northern parcel (Appendix A, Map 8), and over 4,600 acres lie to the north and to the southwest of the southern parcels (Appendix A, Map 9). These wetland areas consist of a combination of Freshwater Emergent Wetlands and Lakes (

Though the area mapped as a wetland to the southwest of the southern parcels is classified as a Lake, this area is only sporadically inundated following storms of sufficient intensity and remains so for short time periods (Appendix A, Map 9). More consistent moisture is found in those areas mapped to the south and southwest of the northern parcels, as well as to the north of the southern parcels the closer one gets to the Wayne Kirch Wildlife Management Area (Appendix A, Map 8). Similar to the perennial surface water bodies discussed in section 3.2.3 above, the wetlands around the northern and southern parcels extend outside the buffers and are obviously continuous. More detail about the wetland classifications mentioned here and the system of codes used to further delineate these wetlands can be found at the U.S. Fish and Wildlife National Wetlands Inventory website (USFWS, 2023).

Environmental Effects

Proposed Action
Impacts to wetland areas from development of the parcels following APD approval could include direct impacts due to increased surface runoff into wetlands from a construction site. This could cause increased sedimentation and possibly contamination of a wetland area if there are contaminants in the runoff. Projects that involve groundwater pumping for project may lower the water table over time by an amount sufficient to propagate through the system far enough to influence adjacent wetlands. This may have implications for groundwater-dependent ecosystems and dependent aquatic species. The possibility of wetland area contamination from the migration of project-related chemically impacted groundwater would be another concern.

Implementation of BMPs along with compliance with state and federally imposed sedimentation and runoff control measures would be required to prevent transport and delivery of sediments or undesired fluids into wetland areas. APD approval would be contingent on requirements that lessees follow state and BLM requirements for well development and monitoring to reduce potential for impacts. To guard against impacts to wetlands and riparian areas, the BLM would work with the permittee to develop site-specific conditions of approval and design features at the APD stage.

No Action Alternative
The No Action Alternative would create no additional impacts to wetland areas outside those occurring under current management. Activities on currently leased parcels adjacent to the proposed parcels would remain on going as permitted on surrounding federal, state, and private lands.

3.2.5. Fish and Wildlife

Affected Environment
The nominated oil and gas parcels are expected to provide habitat for numerous wildlife species. Common big game species that inhabit a portion or all of the proposed lease areas include pronghorn antelope (*Antilocapra americana*), and Rocky Mountain elk (*Cervus canadensis nelsoni*). Migratory birds protected under the Migratory Bird Treaty Act (MBTA) that occupy the parcels would be protected by standard lease notices found in Appendix D.

According to a GIS analysis using Nevada Department of Wildlife (NDOW) big game data, there is approximately 4,720 acres of pronghorn antelope habitat. Of this, approximately 525 acres has been identified as winter range and 4,195 as year-round. Additionally, there are approximately 510 acres of year-round Rocky Mountain elk habitat within the parcels. According to the data, there is no critical big game habitat within or near the parcels. Other wildlife species that inhabit the lease areas include mountain lions, bobcats, coyotes, jackrabbits, cottontails, badgers, and numerous birds, reptiles, and small mammals.

Table 3.12 Big Game Crucial Habitat within Parcel Groups

Species	Habitat	Approximate Habitat Acres
Pronghorn	Year Round	4,195
	Winter Range	525
Rocky Mountain elk	Year Round	510

Environmental Effects

Proposed Action
There would be no direct effects from issuing new oil and gas leases because leasing does not directly authorize oil and gas exploration and development activities. Direct impacts from these activities would be analyzed under additional, site-specific NEPA review The RFFD is the basis for indirect future or potential impacts that could occur once the parcels are leased. General short term and long-term impacts of oil and gas to general wildlife species are discussed in the Ely District PRMP/FEIS (2007) in Section 4.6 Fish and Wildlife on pages 4.6-14 – 4.6-15. Short term impacts analyzed in the Ely District RMP include vegetation loss, habitat fragmentation, wildlife displacement, and increased noise and human presence. Long term impacts analyzed in the Ely District RMP include irretrievable loss of habitat, change in vegetation composition, and habitat fragmentation and wildlife displacement.

No Action Alternative
Under the No Action Alternative, the lease sale would not occur, and impacts to fish and wildlife would remain the same. Activities on currently leased parcels adjacent to the proposed parcels would remain on-going as permitted on surrounding federal, state, and private lands.

3.2.6. Special Status Species

Affected Environment
BLM Manual 6840 entitled Special Status Species Management states that special status species are those that 1) are listed or proposed for listing as endangered or threatened under the ESA, and 2) species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA, which are designated as Bureau Sensitive by the State Director(s). Additionally, all federal candidate species, proposed species, and delisted species in the five years following delisting would be conserved as Bureau sensitive species.

A GIS analysis was conducted using data from NDOW, BLM, USFWS, and the Nevada Natural Heritage Program to determine locations of special status species in relation to the lease parcels. The results of the analysis can be found in Table B. 2 in Appendix B. It also includes aquatic species within the hydrobasin that could be affected by groundwater changes. An additional review of special status species would occur when an APD is submitted and may result in subsequent surveys of sensitive species.

Greater sage-grouse

While the parcels are outside of Greater sage-grouse habitat, they potentially require coordination with the Nevada Conservation Credit System (CCS).

Federally Threatened and Endangered
There are no federally threatened or endangered species within the proposed parcels, however the endangered White River spinedace (*Lepidomeda albivallis*) occurs on land managed by the Nevada Department of Wildlife in the Kirch Wildlife Management Area and on private land. The parcels proposed for the July 2023 lease sale occur approximately 14.0 to 18.0 miles from spinedace habitat.

Aquatic
Springsnails and unsurveyed springs occur within all the hydrobasins where the proposed parcels for the July 2023 oil and gas lease sale occur. Within the White River Valley hydrobasin, many springsnail species of concern occur. The proposed July 2023 parcels occur within 9.0 to 16.0 miles of four springsnail species of concern: the White River Valley pyrg (*P. sathos*), the Flag pyrg (*P. breviloba*), the Pahranagat pebblesnail (*P. merriami*), and the Butterfield pyrg (*P. lata*).

The Railroad Valley hydrobasin provides habitat for a high proportion of endemic species that rely on the water resources, including Railroad Valley springfish (*Crenichthys nevadae*); the newly described Railroad Valley toad (*Bufo nevadensis*); and Lockes pyrg (*Pyrgulopsis lockensis*). Other species of concern within the Railroad Valley hydrobasin include the Toquerville springsnail (*Pyrgulopsis kolobensis*), and Railroad Valley tui chub (*Siphateles bicolor*). Parcel NV-2023-07-6966 is located approximately 6.0 to 10.0 miles from known loctions of Lockes pyrg and Toquerville springsnail, and approximately 15.0 miles from known locations of Railroad Valley springfish.

Birds and Raptors
Analyzed in Section 3.2.7 Migratory Birds below.

Plants
Several BLM special status species plants occur within all the hydrobasins where the proposed parcels for the July 2023 oil and gas lease sale occur. Within the White River Valley and Pahroc hydrobasins, Tiehm's blazing star (*Mentzilia tiehm*i) is known to occur within parcel NV-2023-07-1531. Tiehm's blazing star and Eastwood milkweed (*Asclepias eastwoodiana*) occurs within approximately 0.6 miles of parcels NV-2023-07-1529 and NV-2023-07-6916. Several other populations of Tiehm's blazing star and Eastwood milkweed occur within 5.0 miles of these three proposed parcels. Within the Railroad Valley hydrobasin, the proposed Parcel NV-2023-07-6966 is located approximately 4.0 to 5.0 miles from four known locations of Currant milkvetch (*Astragalus uncialis*), and approximately 7.0 miles from a known location of Railroad Valley globemallow (*Sphaeralcea caespitosa var. Williamsiae)*. A list of known Sensitive Species occurring within the lease parcels is included in Appendix B, Table B. 2.

Environmental Effects

Proposed Action
There would be no direct effects from issuing new oil and gas leases because leasing does not directly authorize oil and gas exploration and development activities. Direct impacts from these activities would be analyzed under additional, site-specific NEPA reviewed in response to APDs. The RFFD analysis is the basis for indirect future or potential impacts that could occur once the parcels are leased. Impacts would be similar to those described under the Fish and Wildlife Section (3.3.6) of this document such as habitat loss and/or degradation or displacement from noise and human presence. General short-term and long-term impacts of oil and gas to special status species are discussed in the 2007 Ely District PRMP/FEIS 2007 in Section 4.7 Special Status Species on pages 4.7-33 – 4.7-39. Because of the highly specialized and endemic nature of some special status species, additional mitigation may be needed at the exploration and development stages.

Notices and timing stipulations would minimize some effects to special status species. For example, the raptor nest site timing stipulation would minimize effects to Northern goshawk, golden eagle, western burrowing owl, ferruginous hawk, and peregrine falcon during the breeding season.

Threatened and Endangered
As discussed in Section 3.3.4 for groundwater, the likelihood of impacts to groundwater are anticipated to be remote. With minimization measures, additional analysis, and section 7 consultation, there are no anticipated indirect impacts from oil and gas exploration. However, some species like the White River spinedace (*Lepidomeda albivallis*) and Railroad Valley springfish (*Crenichthys nevadae)* are endemic to these hydrobasins. Oil and gas development could affect fish habitat by altering riparian vegetation, reducing water levers or flow by water consumption or disruption of the groundwater supply, and degrading the water quality from surface disturbance, runoff, and contaminant leaks or spills, depending on proximity of development to habitat.

Aquatic
The impacts to groundwater resources (Section 3.3.4) and riparian wetlands (Section 3.3.5) are discussed above. Impacts include contamination of groundwater, increased surface runoff, surface contamination, and ground water table drawdown, which all could affect aquatic resources. However, oil and gas projects would require compliance with local, state, and federal directives, regulations, permitting, and stipulations that are related to groundwater protection as well as federal and State of Nevada guidelines for hydraulic fracturing. Additional site-specific NEPA review of the potential for groundwater impacts would be conducted prior to any approval for an APD.

The effects of oil and gas leasing and development to aquatic species are discussed in the 2007 Ely District PRMP/FEIS in Section 4.7 Special Status Species on pages 4.7-34 – 4.7-38. Oil and gas development could affect aquatic habitat by altering riparian vegetation, reducing water levers or flow by water consumption or disruption of the groundwater supply, and degrading the water quality from surface disturbance, runoff, and contaminant leaks or spills, depending on proximity of development to habitat.

Birds
Analyzed in Section 3.2.7 Migratory Birds below.

Plants
Oil and gas exploration, and production activities, as outlined in the RFFD, have the potential to effect sensitive vegetation by reduction or loss in production, distribution, and vigor of sensitive plant species and/or communities due to oil and gas activities. Additionally, ground disturbance and activities associated with oil and gas have the potential to introduce invasive plant species to communities that currently lack invasive plants.

No Action Alternative
Under the No Action Alternative, the lease sale would not occur, and no impacts to special status plant or animal species would occur. Activities on currently leased parcels adjacent to the proposed parcels would remain on-going as permitted on surrounding federal, state, and private lands.

3.2.7. Migratory Birds

Affected Environment
Bird species protected by the Migratory Bird Treaty Act (MBTA) are found throughout the analysis area. Riparian vegetation associated with perennial streams, seeps, and springs is particularly important for a diverse migratory bird community. The parcels include habitats for migratory bird species on a seasonal or yearlong basis. Special status species birds are also covered by the MBTA.

Environmental Effects

Proposed Action
There would be no direct effects from issuing oil and gas leases, because leasing does not directly authorize exploration or development, or any other ground disturbing activities. Direct impacts from these

activities would be analyzed under additional, site-specific NEPA review once an APD is submitted. The RFFD analysis is the basis for indirect future or potential impacts that could occur once the parcels are leased. Indirect effects may occur during the exploration and development phase. These effects would be analyzed at the time these activities are proposed. In addition to the generalized potential effects to fish and wildlife, effects to migratory birds may include temporary, individual or population displacement from preferred habitat, decreased clutch survival increased potential for animal mortality or behavior changes, and physiological stress that negatively affects fitness. A stipulation would be applied during the migratory bird nesting season to minimize the effects discussed above.

No Action Alternative
Under the No Action Alternative, the lease sale would not occur, and no impacts to migratory birds would occur. Activities on adjacent lands would remain on-going as permitted on surrounding federal, state, and private lands.

3.2.8. Visual Resource Management

Affected Environment
The proposed parcels nominated for lease fall within Visual Resource Management (VRM) Classes designated in the 2008 Ely District RMP. BLM administered lands are placed into four visual resource inventory classes: VRM Classes I, II, III, and IV. Class I and II are the most sensitive, Class III represents a moderate sensitivity and Class IV is of the least sensitivity VRM classes serve as a management tool that provides an objective for managing visual resources. Table 3.13 below includes the VRM Classification Objectives within the project area.

Table 3.13 VRM Classification Objectives

VRM Classes	Visual Resource Objective	Change Allowed (Relative Level)	Relationship to the Casual Observer
Class III	Partially retain the existing character of landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate a casual observer's view. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.	Moderate	Activities may attract attention but should not dominate the view.
Class IV	Provide for management activities, which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. Every attempt, however, should be made to reduce or eliminate activity impacts through careful location, minimal disturbance, and repeating the basic landscape elements.	High	Activities may attract attention, may dominate the view.

Environmental Effects

Proposed Action
The actual sale of the lease parcels would not impact visual resources, though exploration and the development of the leased parcels may impact visual resources. When an APD is submitted, a site-specific visual contrast rating would be conducted. The contrast rating would identify what types of design features are needed to minimize any visual contrast. Those recommended design features would be incorporated into the APD as a means to meet the VRM class objective.

The July 2023 lease parcels are within VRM III and IV. The Northeastern lease parcels are located in VRM Class III in Railroad Valley where oil and gas production facilities are already present and are dominating features on portions of the landscape and view. To have a few more production facilities within this area does not generate any new contrast, it only adds to it. The southern lease parcels are

located in VRM Class III and IV where there are not currently any oil and gas production facilities and almost no structures. To have any production facilities appear within this area would generate a contrast that is high.

In both locations there would be design features required for production facilities that will help keep the contrast low and aid in not attracting attention. Design features would include painting facilities with the appropriate Standard Environmental Color. In addition, the locations topography or addition of topographic screening may aid in hiding or obscuring development or production facilities.

No Action Alternative
Under No Action Alternative the lease sale would not occur, therefore no impacts to visual resources would occur. Activities on currently leased parcels adjacent to the proposed parcels would remain on-going as permitted on surrounding federal, state, and private lands.

3.2.9. Livestock Grazing

Affected Environment
The proposed parcels nominated for lease fall within the boundaries of three grazing allotments. The affected allotments, Sunnyside (#NV21023), Duckwater (NV00701), and Fox Mountain (NV11001) are all administered by the Bristlecone Field Office. The potential area of impacts to livestock grazing and forage resources would include portions of two grazing allotments in White River Valley and one allotment in Railroad Valley. Affected allotments are listed, along with overall allotment acres and total acres of the oil and gas lease parcels which would be offered for leasing under the Proposed action which overlap each affected allotment, are listed in Appendix B, Table B.5. The Ely District Approved Resource Management Plan (2008) authorizes livestock grazing on all three of the affected allotments. Term permits authorize grazing use based on perennial vegetation. Authorized grazing use includes both cattle and sheep, active use and trailing use. Authorized grazing use is in accordance with established use periods or seasons of use for the allotment. Allotment grazing periods of use vary and include both seasonal and yearlong. Seasons include fall/winter/spring period and spring/summer/fall period. Grazing systems may include rest-rotation, deferred rotation, and deferred rest rotation. Allotments that are grazed both yearlong and seasonally include herding of cattle and sheep between public land allotments, base property, other leased or private pasture and U.S. Forest Service-administered lands. Some allotments are grazed in common by two or more livestock permittees. Livestock are either mixed together in the same use area or graze in separate use areas of the allotment.

Environmental Effects

Proposed Action

There would be no direct effects to livestock grazing from issuing new oil and gas leases because leasing does not directly authorize oil and gas exploration and development activities. Should exploration or development be proposed within leased parcels, additional, site specific NEPA reviewed would be completed to assess the potential impacts to livestock grazing within the project area when an APD is submitted. The RFFD is the basis for indirect future or potential impacts that could occur once the parcels are leased.

Under the proposed action for the lease sale, livestock grazing would continue. However, should oil and gas development occur on the lease, loss of forage and possible reductions of permitted AUMs could occur in affected allotments due to soil and vegetation disturbance and development activity. Livestock movement patterns could be altered and access to range improvements could be hindered by new roads, oil well pads, and human presence and activity. Increased traffic may lead to an increase in vehicle-livestock collisions, and increased livestock mortality. Potential impacts to specific allotments, pastures,

and range improvements would be analyzed with additional site-specific NEPA review at the APD stage. Any mitigation measures and design features protecting range improvements would be identified at the development stage.

No Action Alternative
Under the No Action Alternative, the lease sale would not occur and no impacts to livestock grazing resources would occur. Activities on currently leased parcels adjacent to the proposed parcels would remain on-going as permitted on surrounding federal, state, and private lands.

3.2.10. Geology and Mineral Extraction

Affected Environment

Geology
The Ely District falls within the Basin and Range province and is comprised of north-south trending mountain ranges separated by broad valleys, created through extension of the earth's crust where portions of the crust were faulted and either down thrown (creating basins), or uplifted, creating mountains. The resulting separation and crustal thinning brought magma heat sources close to the surface, leading to volcanic activity, superheated fluid, associated intrusive and igneous activity, and maturation of hydrocarbon sources. This geologic setting has been instrumental in the location of and potential for numerous economic metallic mineral deposits in the Analysis Area, as well as development of economic geothermal and hydrocarbon resources.

During the Paleozoic, sediments were deposited in a shallow marine environment in the analysis area. Thick sequences of marine sediments were deposited, including the Devonian carbonaceous Pilot Shale and the Mississippian Chainman Shale, a black shale with high organic content and a potential source rock for hydrocarbons. Thickness of the sediments decreases to the southeast.

Nevada is seismically active, with numerous earthquakes each year; most are small and the epicenters can be several miles below the ground surface. It is unlikely that any of Nevada's oil wells would be impacted from minor earthquakes (< 5.5 magnitude) that are often felt but only cause minor damage.

Locatable Minerals historically or currently mined within the Analysis Area include metallic minerals (i.e., gold, silver copper, mercury, zinc, molybdenum, manganese, uranium, tungsten); industrial minerals (limestone, barite, gypsum, diatomaceous earth, sulfur, and fluorspar); and most recently, fluid locatable (lithium). Oil and gas interests may potentially overlap with those of mineral exploration; and mining claims, mining notices, or plans of operation may overlap the parcels, so that coordination with the claimant may be necessary.

Mineral Materials of common minerals encompasses petrified wood and common varieties of sand, stone, gravel, pumice, pumicite, cinder, and clay. Less common are sales of topsoil and specialty sand, gravel, or decorative rock. Saleable mineral sites with a priority for use are located along State, County, and BLM managed roads. These types of saleable minerals are distributed throughout Nevada and overlap with oil and gas lease parcels should be expected.

Leasable Minerals are those that may be extracted from leases on public lands and are subdivided into solid and fluid leasable mineral groups. Solid minerals include coal, sodium, sulfur, potassium, and phosphate (and under certain conditions, sand, and gravel). Fluid minerals include oil, gas, and geothermal resources.

Oil and Gas parcels on public lands have been available within the District for several decades. The main producing oil fields are located within Railroad Valley and Pine Valley; Oil and gas in Railroad Valley occur mainly in Miocene and younger age basins formed during the Basin and Range Orogeny. Hydrocarbon traps are stratigraphic and structural in nature. Most oil and/or gas are trapped in the

fractured, Oligocene age volcanic rocks and are believed to be sourced from deeper Cretaceous and early Tertiary marine sediments. Pine Valley oil production comes primarily from Oligocene and Miocene sedimentary and volcaniclastic sedimentary rocks, but rocks as old as the Devonian Telegraph Canyon Formation host oil in the vicinity of the Analysis Area. Natural gas is not produced in commercial quantities in Nevada.

Typically drill sites are chosen following geophysical exploration of subsurface conditions, followed by exploration drilling, or drilling of wildcat wells. Additional drilling occurs when initial exploration has shown the presence of a resource, and placement of new wells is used to further define the extent of that resource. Production occurs if the oil can be transported and sold at a profit. The existing oil field in Railroad Valley uses regional temporary storage facilities and later transport to a refinery for processing.

As of October 25, 2022, there were 358 authorized oil and gas leases in the state of Nevada, 84 of which are in the Ely District primarily within the Bristlecone Field Office. Nevada has produced more than 50 million barrels of oil since 1955 and is suspected to have significant oil resources still yet to be produced (NDOM). East-central Nevada has a history of oil production, a significant portion of which occurred in the Bristlecone Field Office. Shale oil contains significant crude oil and may be used as a source of petroleum. The potential within the Analysis Area is low in the short term and probably low to moderate in the long term. Shale oil production typically requires a very large resource, access to energy, and access to large volumes of water. The Chainman Formation (Mississippian), Vinini Formation (Ordovician), Woodruff Formation (Devonian), Sheep Pass Formation (Eocene), and the Elko Formation (Eocene-Oligocene) are potential sources of shale oil within the Analysis Area (Anna et al. 2007). The Chainman and Sheep Pass Formations notably host hydrocarbons in the Railroad Valley area as source rock.

Geothermal resources in the Ely District have been thought to have low to moderate temperatures for potential production of geothermal energy (BLM, 2007). There are currently no active geothermal production areas within the Ely District planning area (Muntean J.L. & Davis D.A., 2021).

Environmental Effects

This section discusses the potential impacts from leasing nominated parcels according to the two alternatives. Information on mineral claims, leases, exploration, and development was obtained using reports pulled from BLM's Oracle Legacy Rehost software, "LR2000 database," on February 13, 2023.

Proposed Action
Locatable Minerals

No mining claims occur in the nominated parcels. Additional research involving the NVSO and county courthouses to determine if any claims overlap the parcels is not necessary for this level of analysis. Further research would be conducted during additional site-specific NEPA reviewed when an APD is submitted, given the parcels would be leased.

Oil and Gas leasing, exploration, and development could interfere with the exploration and extraction of locatable minerals on a parcel. Potential interference may be mitigated at the time of development by coordination and agreement between the operators. Additionally, oil and gas exploration and development in Nevada typically involves reclamation within ten years; therefore, it may only temporarily affect locatable mineral operations, if simultaneously authorized.

Mineral Materials

None of the nominated parcels contain active mineral material sites. Issuing oil and gas leases on these lands would allow for development of potential oil, oil shale, and gas deposits, and should have minimal

to no effect on potential future development of other mineral materials (e.g. sand, gravel, dimension stone, etc.).

Leasable Minerals

No nominated lands contain existing leases. Issuing oil and gas leases on these lands would allow for development of potential oil, oil shale, and gas deposits, and should have minimal to no effect on potential future development of other leasable minerals (e.g. geothermal, phosphate, sodium, etc.).

No Action Alternative
The No Action Alternative would not have an effect on locatable minerals, mineral materials, or leasable minerals except that it would reduce the opportunity for exploration and discovery of potential oil and gas deposits that are needed to supply local, regional, and national needs.

3.2.11. Wastes, Hazardous and Solid

Affected Environment
The nominated lease parcels are dispersed throughout rural areas and are not adjacent to any school or population centers. There are currently no facilities/built environments or activities occurring within the parcels that would result in impacts related to hazardous and solid waste generation.

Environmental Effects

Proposed Action
Under the Proposed Action to lease parcels, no ground disturbing activities would occur and therefore no impacts relative to hazardous or solid waste would occur. However, the Proposed Action to lease parcels for oil and gas activities including exploration drilling, extraction, production facilities, pipeline transport, and tanker loading, unloading and transport, has the potential to affect the environment through production of waste fluids, emissions and site impacts resulting from field development and related infrastructure. Oil spills, produced waters, drill fluids/cuttings, and hazardous materials could be encountered at a facility or drill pad. Under any alternative, all appropriate statutes, regulations and policies (see Section 1.4) and Gold Book standards, guidelines and BMPs would be applied.

The RFFD predicts that approximately 200 exploration wells would be drilled in the District primarily within the Bristlecone Field Office in the next 10 years, of which 40 would continue into development and production phases. Refer to Section 2.4 of this document for more detail regarding the RFFD for the Ely District.

Examples of indirect (future) environmental impacts from hazardous materials, hazardous waste, and solid waste which might be encountered during each phase are provided below. However, most of these incidental impacts, if not all, can be avoided or lessened through proper inspection and maintenance.

Exploration: Impacts could include drilling fluid or hydrocarbon spills, leakage from improperly constructed reserve pits or wastewater collection systems, improperly handled brine backflow water from drilling that may or may not have used HF technology, and accumulations of solid waste, which could impact water quality or contaminate soils. Hydrocarbon spills could consist of hydraulic fluid, gasoline, diesel, oil, or grease from vehicles, generators, and exploration drill rigs. Backflow water from exploration drilling can be extremely saline; improper disposal could raise the pH of existing surface waters to unacceptable levels. Accumulations of nonhazardous solid waste could include trash, drill cuttings or mud, wastewater, bentonite and cement generated during drilling operations.

Development: Impacts could be the same as in the exploration phase; however, the quantities of hazardous materials, hazardous waste, or solid waste used and generated could be greater. Accidental

releases from reserve pits or waste water collection systems could include hazardous water treatment chemicals such as chlorine. Also, stormwater runoff could contain elevated quantities of heavy metals and volatile organic compounds. When fracked water comes back to the surface as backflow, it can contain high levels of salts, introduced chemical additives, and various chemicals and compounds that occur naturally within the earth. Backflow spills have been known to kill off all vegetation and render the soil unusable. Nonhazardous solid waste such as drill cuttings or mud could be generated at this stage.

***Production**:* Routine plant operations could involve leaks or spills of substances such as hydraulic fluid, gasoline, diesel, oil, paint, antifreeze, cleaning solvents, transformer insulating fluid, and grease. These discharges could result in impacts to water, soil, air, and wildlife. Stormwater runoff containing heavy metals and volatile organic compounds (VOCs) could be problematic. Nonhazardous solid waste could also be generated.

Final Abandonment: The operator would identify, remove, and properly dispose all hazardous materials, hazardous waste, and solid waste. Spills could occur during removal.

When the RFD scenario is considered, impacts would generally be negligible because the substances involved would be properly handled, stored, and disposed of in accordance with applicable federal, state and local regulations. Proper management of these substances would ensure that no soil, ground water, or surface water contamination would occur with any adverse effect on wildlife, worker health and safety, or surrounding communities. Additional project- and site-specific environmental analysis of any future exploration, development and/or production would allow inclusion of updated mitigation measures, BMPs, and COAs; and performance standards would be defined at that time.

Impacts of any hazardous waste spills in areas with water resources would be potentially substantial and difficult to mitigate. The CSU Water Resources stipulation would require avoiding impacts within 500 feet of surface waters and riparian areas; impacts within 100 feet of ephemeral streams; and impacts to floodplains and playas. Application of this stipulation would not only prevent surface disturbance within the defined areas but would also prevent indirect impacts including accidental contamination.

No Action Alternative
Under the No Action Alternative, the lease sale would not occur and there would be no concerns or issues with solid of hazardous wastes. Activities on currently leased parcels adjacent to the proposed parcels would remain on-going as permitted on surrounding federal, state, and private lands.

3.2.12. Environmental Justice

Affected Environment

For this project the study area has been identified as selected census block groups (BG) in Nye, Lincoln, and White Pine counties, NV and includes the Duckwater and Ely reservations and Ely, NV (Table 3.14). This study area was selected as it contains populations that the proposed lease sale could potentially impact. The population in the study area totals 12,315. The reference area is the State of Nevada non-metro populations for low income and minority populations. The reference area for Tribal communities is the State of Nevada. The project is location in BG 320239601002.

Table 3.14 Ely DO July 2023 O&G Lease Sale Environmental Justice Study Area Block Group Data

Block Group	Description (ST, County, Key Relative Locations)	Low Income *	Minority *	Tribal #
320239601002	NV, N. Nye Co., Railroad Valley, Duckwater Reservation, Project Area	24.9 percent	29.9 percent	11.6 percent
320179501003	NV, Lincoln Co., Pioche	28.1 percent	3.4 percent	0.0 percent
320179502001	NV, Lincoln Co., Basin and Range NM, Pahranagat Valley	40.4 percent	20.6 percent	0.9 percent
320339702003	NV, White Pine Co., Lund	29.0 percent	10.2 percent	0.0 percent
320339702004	NV, White Pine Co., Ruth	16.0 percent	44.5 percent	0.0 percent
320339703003	NV, White Pine Co., Lakawanna	35.5 percent	11.3 percent	1.2 percent
320339703002	NV, White Pine Co., NW Ely	28.4 percent	24.1 percent	1.0 percent
320339702002	NV, White Pine Co., W Ely, Ely Reservation	39.0 percent	35.3 percent	12.3 percent
320339703001	NV, White Pine Co., Ely	42.4 percent	21.4 percent	0.0 percent
320339702001	NV, White Pine Co., Ely, Ely Reservation	21.0 percent	25.3 percent	4.2 percent
BG Totals		28.0 percent	27.0 percent	4.2 percent
Reference area ^# (See above)		28.1 percent	27.6 percent 30.4 percent (MGA)	2.5 percent

- * BLM EJ Mapping Tool (accessed 02/14/2023)
- ^ Headwaters Economics BLM EPS and SEP: https://headwaterseconomics.org/tools/blm-profiles/ (accessed 02/14/2023)
- # American Community Survey: https://data.census.gov/cedsci/table (accessed 02/14/2023)

Low-Income Community Analysis (Appendix A, Map 11)

- A low-income community of concern is present if 1) the population experiencing poverty in one or more study area geographies are near, at, or below 200 percent of the federal poverty threshold of the reference area OR 2) if the population of the community experiencing poverty is at or above 50 percent. Low-income environmental justice communities of concern are identified in the study area. It is estimated that 28.0 percent of the study area population is identified as low-income. This is equal the reference area low-income percentage. This screening identified that 7 census block groups within the study area had a low-income population that met this criterion including: BG 320179501003 (NV, Lincoln Co., Pioche)
- BG 320179502001 (NV, Lincoln Co., Basin and Range NM, Pahranagat Valley)
- BG 320339702002 (NV, White Pine Co., W Ely, Ely Reservation)
- BG 320339702003 (NV, White Pine Co., Lund)
- BG 320339703003 (NV, White Pine Co., Lakawanna)
- BG 320339703002 (NV, White Pine Co., NW Ely)
- BG 320339703001 (NV, White Pine Co., Ely)

Low-income environmental justice communities are clustered around Ely and in Lincoln County, NV. While the project area block group does not qualify as a low-income community using the NV non-metro threshold, it is within a margin of error and warrants further examination – especially as it nearly identifies as a minority environmental justice community and is a tribal environmental justice community.

Minority Community Analysis (Appendix A, Map 12):
A minority community of concern is present if the percentage of the population identified as belonging to a minority group in a study area is 1) equal to or greater than 50 percent of the population OR 2) meets the "meaningfully greater" threshold. Meaningfully greater is calculated by comparing the minority group population percentage with 110 percent of the reference area minority population. The Meaningfully Greater threshold for this study area/project is 30.4. Minority environmental justice communities of concern are identified in the study area. It is estimated that 27.0 percent of the study area population is identified as belonging to a minority population group. This is slightly less than the reference area minority population percentage. This screening identified that 2 census block groups within the study area had a minority identified population that met this criterion including:

- BG 320339702004 (NV, White Pine Co., Ruth)
- BG 320339702002 (NV, White Pine Co., W Ely, Ely Reservation)

Minority environmental justice communities of concern are located around Ely, NV. The project area Block Group - 320239601002 (NV, N. Nye Co., Railroad Valley, Duckwater Reservation, Project Area) - did not meet the meaningfully greater threshold but is above the reference area threshold.

Tribal / Native American Community Analysis (Appendix A, Map 13)
Tribal communities of concern are present if the percentage of the population identified as belonging to an indigenous community is equal to or greater than the reference population. Tribal communities of concern are identified in the study area. It is estimated that 4.2 percent of the study area population is identified as belonging to a tribal population group. This is greater than the reference area tribal population percentage. This screening identified that 3 census block groups within the study area had a tribal identified population that met this criterion including:

- BG 320239601002 (NV, N. Nye Co., Railroad Valley, Duckwater Reservation, Project Area)
- BG 320339702002 (NV, White Pine Co., W Ely, Ely Reservation)
- BG 320339702001 (NV, White Pine Co., Ely, Ely Reservation)

Tribal clustering occurs in and around Ely and in N. Nye County. Consideration should be made to analyze impacts to the members of the Duckwater Reservation and Ely Colony – especially community members living in BG 320339702002 (NV, White Pine Co., W Ely, Ely Reservation) which identifies as low-income, minority, and Tribal environmental justice communities.

Environmental Effects

Environmental Justice (EJ) refers to the fair treatment and meaningful involvement of people of all races, cultures, and incomes with respect to the development, implementation, and enforcement of environmental laws, regulations, programs, and policies (CEQ 1997). Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, states "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations…" (Executive Order 12989). Executive Order 12898 also fully applies to indigenous populations, including the importance of determining any tribal presence in a given plan or project area. The purpose of EO 12898 is to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects on low-income populations, minority populations, or indigenous populations that may experience common conditions of environmental exposure or effects associated with a plan or project. BLM policy, as contained in BLM Land Use Planning Handbook H-1601-1 (BLM 2005) Appendix C, provides direction on how to fulfill agency responsibilities for Executive Order 12898.

Proposed Action
Low-income, minority, and potential indigenous populations exist within the study area and may be disproportionately affected by project actions. Some block group populations identify as more than one environmental justice community and warrant special attention, outreach, and meaningful involvement. While the sale of oil and gas leases, in themselves, do not directly impact environmental justice communities in a disproportionate and adverse manner, should the lease move toward exploration and development, there is potential for said disproportionate and adverse impacts. Low-income, minority, and indigenous communities of concern within the analysis area constitute populations at risk for adverse health outcomes due to demographic or socioeconomic factors. The EPA has concluded that the most severe harms from climate change fall disproportionately upon underserved communities who are least able to prepare for, and recover from, heat waves, poor air quality, flooding, and other impacts (EPA 2021). Aside from ethnicity and poverty status, other factors contributing to increased health risks for the communities of concern in the analysis area include, but are not limited to, age, education, employment, and language proficiency.

Exploration activities may result in adverse impacts to communities of concern if the populations of concern are located near the drilling operations; however, the BLM does not know exactly where drilling operations may take place until lease development is proposed if a nominated lease parcel is developed at all. While the determination of potential adverse and disproportionate effects from specific actions may initially be the assessment of the BLM, this assessment should not be assumed to be the position of specific, potentially affected communities of concern. The BLM realizes that additional adverse impacts may be identified by local communities as specific development locations and types are proposed. Therefore, identified communities of concern would be provided opportunities to identify any perceived adverse environmental impacts at the time of site-specific analysis during the APD stage. The BLM would continue to work with potentially affected communities of concern to identify and address additional EJ issues as they arise.

No Action Alternative
Under the No Action Alternative, the lease sale would not occur, and impacts to environmental justice communities would also not occur. Activities on currently leased parcels adjacent to the proposed parcels would remain on-going as permitted on surrounding federal, state, and private lands.

3.2.13. Native American Religious and other Concerns

Affected Environment
The boundaries of the Ely District encompass the traditional homelands of Western Shoshone, Goshute, and Southern Paiute Tribes. Ethnographic research and oral tradition confirm that these groups have utilized the resources and land since time immemorial, prior to Nevada statehood, and continue to do so. Modern descendant communities include the Duckwater Shoshone Tribe, the Ely Shoshone Tribe, Shoshone-Paiute Tribes of the Duck Valley Indian Reservation, Te-Moak Tribe of Western Shoshone, Yomba Shoshone Tribe, the Moapa Band of Paiute Indians of the Moapa River Indian Reservation, Las Vegas Paiute Tribe, the Confederated Tribes of the Goshute Reservation, and the Paiute Indian Tribe of Utah. Geographic proximity is just one of many factors that contribute to the interest a tribe may have in a particular area. As such, letters were sent throughout Nevada and Utah, including the Intertribal Council of Nevada which links the leaders of all of Nevada's federally recognized tribes. The main concern consistently identified by tribes is the protection of and access to natural, medicinal, and sacred resources, traditional use areas, and sacred sites. Each tribe also maintains a general concern for the welfare of plants, animals, air, landforms, and water. Tribal governments emphasize the health, safety, and prosperity of their members and seriously evaluate the socioeconomic impacts of projects near their communities. Specific information regarding resources, sacred sites, and features on the landscape, shared by tribal representatives during consultation, are confidential.

The parcels offered under this lease consist of one parcel in Railroad Valley and three parcels in White River Valley. The Duckwater Shoshone Reservation, located in Railroad valley, is approximately 16 miles from the northern parcel and approximately 55 miles from the southern parcels. As the tribal community closest to the parcels, they may be the most likely to experience impacts from the eventual development of those parcels.

The BLM invited consultation and coordination with the above Tribes to identify any sites of concern (see Consultation and Coordination, Chapter 5). This project has been presented at the Confederated Tribes of the Goshute Reservation Tribal Council meeting on March 3, 2023, and at the Ely Shoshone Tribal Council meeting on March 14, 2023. The chairman and Tribal Historic Preservation Officer (THPO) of the Duckwater Shoshone Tribe is actively participating in consultation. A field visit was conducted on April 17, 2023, attended by the Duckwater representative and Ely District Tribal Liaison. During the initial field visit no specific concerns were identified, however the Duckwater Shoshone Tribe will continue to participate in consultation if any of the parcels are leased or result in an APD. The Ely Shoshone Tribe, also geographically close to the parcels, reviewed the parcels and is interested in continued coordination and consultation. Environmental Effects

Proposed Action
Under the Proposed Action, all parcels would be offered for lease, with exploration and development possible. Any development on parcels that are leased would require additional analysis under NEPA and compliance with all laws, regulations, and policies governing Federal actions potential affecting cultural resources and areas of tribal interest. In addition to federal cultural and historic resource protection laws, consultation and coordination with Indian Tribal Governments is requisite, ongoing, and would be initiated for any additional action, including but not limited to any ground disturbing activities, construction, or an APD. Prior to the initiation of any ground disturbing activities, construction, or issuance of an APD, all stipulations, conditions, and/or mitigation measures resulting from consultation and coordination would be followed.

No Action Alternative
Under the No Action Alternative, no parcels would be offered for sale, therefore, no effects to areas of tribal interest would be affected. Activities on currently leased parcels adjacent to the proposed parcels would remain on-going as permitted on surrounding federal, state, and private lands.

3.2.14. Human Health and Safety

Affected Environment
Public Health and Safety Affected environment information on Public Health and Safety can be found in the Ely District Proposed RMP in section .3.27. Relevant analysis on Air Quality can be found in section 3.2.0 of this EA Additional analysis can be found in the 2021 BLM Specialist Report on Annual Greenhouse Gas Emission and Climate Trends

Environmental Effects

Proposed Action
Future potential development of the nominated lease parcels would result in emissions of air pollutants that could lead to human health effects depending on the level and duration of exposure. HAPs are known or suspected to cause cancer or other serious health effects, such as compromises to immune and reproductive systems, birth defects, developmental disorders, or adverse environmental effects and may result from either chronic (long-term) and/or acute (short-term) exposure, and/or adverse environmental effects. Breathing O_3 can trigger a variety of health problems, including coughing and sore or scratchy throat; difficulty breathing deeply and vigorously and pain when taking deep breaths; inflammation and

damage the airways; increased susceptibility to lung infections; aggravation of lung diseases such as asthma, emphysema, and chronic bronchitis; and an increase in the frequency of asthma attacks.

The following links provide additional information on air pollution health effects:
Criteria Pollutants:

- Ozone (https://www.epa.gov/ground-level-ozone-pollution) (EPA 2022a)
- Particulates (https://www.epa.gov/pm-pollution/particulate-matter-pm-basics) (EPA 2022b)
- Nitrogen dioxide (https://www.epa.gov/no2-pollution/basic-information-about-no2) (EPA 2022c)
- Carbon monoxide (https://www.epa.gov/co-pollution/basic-information-about-carbon-monoxide-co-outdoor-air-pollution#Effects) (EPA 2022d)
- Lead (https://www.epa.gov/lead-air-pollution/basic-information-about-lead-air-pollution#health) (EPA 2022e)
- Sulfur dioxide (https://www.epa.gov/so2-pollution/sulfur-dioxide-basics#effects) (EPA 2022f)
- Hazardous air pollutants (https://www.epa.gov/haps/health-effects-notebook-hazardous-air-pollutants) (EPA 2021a)

Human health risk assessments cannot be performed until project-specific details are known so that frequency, timing, and levels of contact with potential stressors may be identified (EPA 2022h). However, each of the reasonably foreseeable environmental trends and planned actions have been, or will be, subject to relevant rules and regulations regarding public health and safety. Ongoing and future potential development would continue to present aggregate risks to human health as detailed above. When wells reach the end of their useful life and are properly plugged and reclaimed, they would no longer contribute to air quality effects; however, depending on the level and duration of individual's exposure during well operation, some of the public health effects from air pollution may endure beyond the life of the wells (e.g., chronic respiratory problems such as asthma).When authorizing development, federal and state laws, regulations, and policy are applied to reduce effects or respond to incidents. These include the following:

- Federal, state, county, and municipal fire managers shall coordinate on fire response and mitigation.
- Developers who install and operate oil and gas wells, facilities, and pipelines are responsible for complying with the applicable laws and regulations governing hazardous materials and for following all hazardous spill response plans and stipulations.
- All well pads, vehicles, and other workplaces must comply with worker safety laws as stipulated by the Occupational Safety and Health Administration (OSHA).
- Vehicular traffic and pipelines are regulated according to safety laws as stipulated by the Department of Transportation.
- Measures to lower risks related to hydrogen sulfide exposure include flaring or venting gas and the use of stock tank vapor recovery systems.

No Action

Under the No Action Alternative, no parcels would be offered for sale, therefore, no effects to human health and safety would be affected. Activities on currently leased parcels adjacent to the proposed parcels would remain on-going as permitted on surrounding federal, state, and private lands.

Chapter 4. Cumulative Impacts

4.1. Resources

As required under the NEPA and the regulations implementing the NEPA, this section analyzes potential cumulative impacts from past, present, and reasonably foreseeable future actions (RFFAs) combined with the Proposed Action within the area analyzed for impacts in Chapter 3 specific to the resources for which cumulative impacts may be anticipated.

A cumulative impact is defined as "the impact which results from the incremental impact of the action, decision, or project when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 Code of Federal Regulations (CFR) 1508.7).

The geographic scope of a cumulative effect is defined in this EA with the Cumulative Effects Study Area (CESA). CESAs are defined for each resource evaluated. Two or more resources may have the same CESA.

For the purpose of this EA, only indirect impacts are discussed in this section. Direct incremental cumulative impacts from a potentially proposed oil well would be analyzed during the APD review process. There are no cumulative impacts from leasing. The following is a discussion of cumulative impacts resulting from potential future development under the RFFD described in Section 2.4 if this EA.

4.2. Past, Present, and Reasonably Foreseeable Future Actions

Past Actions

The Ely District is rich in natural resources and the cumulative effects study area has been used for a wide array of activities over the years. Mining, grazing, recreation, realty actions, and oil exploration have been conducted throughout the Ely District and more than likely, would continue for many more years. While more than 200 wells have been drilled in the Ely District, only two are in production.

Present Actions

Refer to the affected environment discussions in Chapter 3 for presently authorized activities affecting the nominated parcels.

Reasonably Foreseeable Future Actions

Table 4.1 shows a list of Reasonably Foreseeable Future Actions (RFFA) that have been analyzed for environmental impacts within the project area. Mining, grazing, recreation, realty actions, fuels treatments and oil exploration are being conducted throughout the Ely District. For purposes of this cumulative impacts analysis the project area includes Nye, White Pine, and Lincoln Counties. The approximate total ground disturbance of RFFAs is 28,708.12 acres.

Table 4.1 Reasonably Foreseeable Future Actions

Project Name	Location (County)	Type of Action	Acres of Disturbance
White Pine County Conservation, Recreation, and Development Act (WPCCRDA) Round 2 Sales/Disposal	White Pine	Lands and Realty	432
Mary Ann	White Pine	Mining	4*
Dunbar Stone	White Pine	Mining	13*
SAM Oil: #1-9	White Pine	Oil and Gas	6
Pipeline Canyon #28-1	White Pine	Oil and Gas	6
Gold Rock Mine Project	White Pine	Mining	3,946
Pan Mine Project	White Pine	Mining	1,088
Robinson Mine Project	White Pine	Mining	8,306
Bald Mountain Mine North and South Operations Area Projects	White Pine	Mining	14,752
Mt Moriah Stone	White Pine	Mining	10
South Moriah Quarry	White Pine	Mining	3
Hogum-Stormy Claim	White Pine	Mining	20
Mary Ann Canyon	White Pine	Mining	3*
GBAR Mine	White Pine	Mining	14
Pankow Triple 7	White Pine	Mining	5*
Outcome Based Grazing Range Improvements	Lincoln/Nye/White Pine	Grazing	100*
			Total 28,708

*Approximate

4.3. Cumulative Impacts

4.3.1. Air Quality and Climate Change

Proposed Action

Air Quality - Cumulative impacts to air quality would occur only following an APD approval and subsequent development, and not from the proposed action of offering the lease parcels. The CESA includes the regional air shed of eastern central Nevada encompassing the whole analysis area. Impacts to air quality within the CESA for air quality from past and present actions have included particulate (PM2.5 and PM10) and combustion emissions from agriculture, road construction and maintenance, off-highway vehicle (OHV) use and recreation, exploration, mining and processing activities, aggregate operations, public land management activities, and wildland fire. All activities within the CESA with more than five acres (20 acres for minerals projects) of surface disturbance would operate under an air quality permit from the State of Nevada Bureau of Air Pollution Control (BAPC).

Impacts to air quality from RFFAs could result from the localized generation of dust and combustion emissions from OHV use and recreational traffic on unpaved roads, livestock grazing, agricultural use, road construction and maintenance, exploration, aggregate operations, public land management activities, and fugitive emissions from wildland fire. Dust from public traffic on unpaved roads would likely create a low impact to air quality and impacts would be localized.

The cumulative impact on air quality from the incremental impact of the proposed action when added to the past actions, present actions, and RFFAs would be fugitive, point source, and related mobile combustion emissions, which would remain low. Any air quality regulations implemented by BAPC and the BLM would serve to mitigate the regulated emissions and help to maintain the attainment status of the current regional air quality.

Climate Change - The analysis of GHGs contained in this EA includes estimated emissions from those the RFD as described above. An assessment of GHG emissions from other BLM fossil fuel authorizations including coal leasing and oil and gas leasing and development is included in the BLM Specialist Report on Annual GHG Emissions (referred to as Annual Report, see Chapter 5). The Annual Report includes estimates of reasonably foreseeable GHG emissions related to BLM lease sales anticipated during the fiscal year, as well as the best estimate of emissions from ongoing production, and development of parcels sold in previous lease sales. It is, therefore, an estimate of cumulative GHG emissions from the BLM fossil fuel leasing program based on actual production and statistical trends.

The Annual Report provides an estimate of short-term and long-term GHG emissions from activities across the BLM's oil and gas program. The short-term methodology presented in the Annual Report includes a trends analysis of (1) leased federal lands that are held-by-production, (2) approved applications for permit to drill (APDs), and (3) leased lands from competitive lease sales occurring over the next annual reporting cycle (12 months), to provide a 30-year projection of potential emissions from Federal oil and gas lease actions over the next 12 months. The long-term methodology uses oil and gas production forecasts from the Energy Information Administration (EIA) to estimate GHG emissions out to 2050 that could occur from past, present, and future development of Federal fluid oil and gas. For both methodologies, the emissions are calculated using life-cycle-assessment emissions and data factors. These analyses are the basis for projecting GHG emissions from lease parcels that are likely to go into production during the analysis period of the Annual Report and represent both a hard look at GHG emissions from oil and gas leasing and the best available estimate of reasonably foreseeable cumulative emissions related to any one lease sale or set of quarterly lease sales.

Table 4.2 shows the aggregate GHG emissions estimate that would occur from Federal leases, existing and foreseeable, between the years 2022 and 2050, using the methodology described above. The 5-year lease averages include all types of oil and gas leases, including leases granted under the Mineral Leasing Act as well as other authorities, that have been issued over the last five years. As such the projections made from the 5-year averages represent the potential for all types of future oil and gas development activity, and although not at exact acreages, include emissions that would be associated with the subject leases. However, they may also over-estimate the potential emissions from the 12-month cycle of competitive oil and gas leasing activities if the projected lease sale or development activity does not actually occur or is less than estimated.

Table 4.2 Reasonably Foreseeable Projected Emissions from Federal Lease Development

State (BLM Administrative Unit)	GHG Emissions from Past, Present, and Foreseeable Federal Lease Development (Mt CO_2e per year)*
Alabama (ES)	9.34
Alaska	136.9
Arkansas (ES)	9.34
California	51.49
Colorado	243.1
Idaho	0.17
Illinois	0.31
Kansas (ES)	3.32
Kentucky (ES)	0.19
Louisiana (ES)	43.29
Michigan (ES)	1.95
Mississippi (ES)	2.89
Montana	58.82
Nebraska (WY)	0.21
Nevada	2.74
New Mexico	1,939.52
New York	0.01
North Dakota (MT)	379.63
Ohio (ES)	0.37
Oklahoma (NM)	20.43
Pennsylvania	0.46
South Dakota (MT)	2.31
Texas (NM)	49.55
Utah	187.84
Virginia	0.15
West Virginia (ES)	0.45
Wyoming	1,487.65
Total	**4,614.81**

*Emissions obtained from 2021 Annual Report, Figure 5-1

The most recent short-term energy outlook (STEO) published by the EIA (https://www.eia.gov/outlooks/steo/) (EIA, 2022) predicts that the world's oil and gas supply and consumption will increase over the next 18-24 months. The latest STEO projections are adequate to use for the No Action discussion as the global forecast models used for the STEO are not dependent on whether the BLM issues onshore leases but are based on foreseeable short-term global supply and demand and include oil and gas development /operations on existing U.S. onshore leases. The most recent STEO includes the following projections for the next two years:

- Global liquid fuels consumption is projected to be 99.82 million barrels per day (b/d) in 2022 and increase to 100.98 million b/d in 2023.
- U.S. crude oil production averaged 11.2 million b/d in 2021. Production is expected to average 11.9 million b/d in 2022 and to rise to 12.3 million b/d in 2023.

- Natural gas production is expected to average 99.7 Bcf/d in 2023, 2% more than in 2022.
- U.S. LNG export capacity increases will contribute to LNG exports of 10.85 billion cubic feet/day (Bcf/d) in 2022, up from 9.76 Bcf/d in 2021. LNG exports are predicted to average 12.33 Bcf/d in 2023.
- Coal production is expected to total 595 million short tons (MMst) in 2022, up 3% from 2021. The increase reflects strong international demand for U.S. coal and a need among power plant operators to replenish coal stocks. Monthly U.S. coal inventories through August 2022 were 19% lower compared with the same period in 2021 as production was not sufficient to both replenish stocks and satisfy summer power demand. 2023 projected coal production is expected to decrease to 573 MMst.
- Generation from renewable sources will make up an increasing share of total U.S. electricity generation, rising from 22% this year to 24% in 2023.

Based on recent events both domestically and internationally that have resulted in abrupt changes to the global oil and gas supply, other EIA studies and recent U.S. analyses (associated with weather impacts, etc.) regarding short-term domestic supply disruptions and shortages or sudden increases in demand demonstrate that reducing domestic supply (in the near-term under the current supply and demand scenario) will likely lead to the import of more oil and natural gas from other countries, including countries with lower environmental and emission control standards than the United States (EIA, 2021). Current global supply disruptions have also led to multiple releases from the U.S. Strategic Petroleum Reserve in order to meet consumer demand and curb price surges.

The EIA 2022 Annual Energy Outlook (https://www.eia.gov/outlooks/aeo/) projects energy consumption increases through 2050 as population and economic growth outweighs efficiency gains. As a result, U.S. production of natural gas and petroleum and liquids will rise amid growing demand for exports and industrial uses. In the AEO 2022, crude oil production is forecast to rise in 2022 and 2023 to record high level with production then remaining relatively flat through 2050. However, renewable energy will be the fastest-growing U.S. energy source through 2050. Energy-related CO_2 emissions decrease from 2022 to 2037 due to a transition away from more carbon-intensive coal to less carbon-intensive natural gas and renewable energy for electricity generation. After 2037, CO_2 emissions begin to trend upward as increasing energy consumption, resulting from population and economic growth, outpaces continuing reductions in energy intensity and CO_2 intensity. Further discussion of past, present and projected global and state GHG emissions can be found in Chapter 6 of the Annual Report.

4.3.2. Cultural Resources

Proposed Action

The Proposed Action would have indirect and cumulative impacts to cultural resources in the event that an APD is approved and development proceeds. Any development on leased parcels would be subject to Section 106 of the National Historic Preservation Act (NHPA) and additional NEPA review. Since less than one percent of the Railroad Valley parcel has been culturally inventoried, and since no cultural inventory has occurred on the White Pine Valley parcels, a BLM Class III cultural resource inventory will be required before lease development ground disturbing activity proceeds. This inventory may result in the identification of currently undocumented NRHP-eligible cultural resources. The lease parcels may contain additional NRHP-eligible sites, historic properties, Traditional Cultural Properties (TCPs), and/or sacred sites currently unknown to the BLM that were not identified during the initial lease parcel review process. When NRHP-eligible cultural resources are present, consultation and mitigation is required before the undertaking may proceed. Consultation takes place between the BLM, State Historic Preservation Office (SHPO), concerned Native Tribes, and interested public. Avoidance is the preferred method of mitigation to preserve and protect NRHP-eligible cultural resources. Through consultation,

other mitigation measures may be considered on a case-by-case basis. Any party proposing oil and gas exploration or development on leased parcels shall be responsible for all costs related to conducting Section 106 of the NHPA. The successful lease of a parcel does not guarantee the feasibility of future oil and gas exploration or development.

No Action Alternative
The No Action Alternative would have no cumulative impacts to cultural resources. Activities on currently leased parcels adjacent to the proposed parcels would remain on-going as permitted on surrounding federal, state, and private lands.

4.3.3. Water Resources: Surface and Ground

Proposed Action
Groundwater Resources

The CESA for groundwater resources are the 10-mile and 13-mile buffers described above in section 3.2.3 for the northern and southern parcels, respectively (Appendix A, Maps 6 and 7). Impacts to groundwater resources within the CESA have resulted from past and present actions such as grazing, road construction and maintenance, OHV use and recreation, mining and processing activities, oil exploration and development, aggregate operations, public land management activities, and wildland fire. In addition to the RFFAs listed in Table 4.1, these activities would be expected to continue within the CESA and impacts from these RFFAs to groundwater resources would be like those described for past and present actions. Reclamation of areas disturbed from past and present actions and natural revegetation have helped lessen these impacts.

The cumulative impact to groundwater resources from the incremental impact from parcel development following an APD approval, when added to the past actions, present actions, and RFFAs may add effects like those described in section 3.2.3 above for groundwater. However, lease stipulations and conditions of approval, coupled with compliance with state and federally imposed regulations, would help to minimize the level of these incremental impacts.

No Action Alternative
The No Action Alternative would add no incremental impacts to groundwater resources in the analysis area beyond those occurring under current management. Activities within the CESA would remain on going as permitted on surrounding federal, state, and private lands.

Surface Water Resources

The CESA for surface water resources are the 10-mile and 13-mile buffers described above in section 3.2.3 for the northern and southern parcels, respectively (Appendix A, Maps 6 and 7). Impacts to surface resources within the CESA have resulted from past and present actions such as grazing, road construction and maintenance, OHV use and recreation, mining and processing activities, oil exploration and development, aggregate operations, public land management activities, and wildland fire. In addition to the RFFAs listed in Table 4.1, these activities would be expected to continue within the CESA and impacts from these RFFAs to surface water resources would be like those described for past and present actions. Reclamation of areas disturbed from past and present actions and natural revegetation have helped lessen these impacts.

The cumulative impact to surface water resources from the incremental impact from parcel development following an APD approval, when added to the past actions, present actions, and RFFAs, may add effects like those described above in section 3.2.3 for surface water. However, lease stipulations and conditions

of approval, coupled with compliance with state and federally imposed regulations, would help to minimize the level of these incremental impacts.

No Action Alternative
The No Action Alternative would add no incremental impacts to surface water resources in the CESA beyond those occurring under current management. Activities within the CESA would remain on going as permitted on surrounding federal, state, and private lands.

4.3.4. Wetlands and Riparian Zones

Proposed Action
The CESA for the wetlands and riparian zones are the 10-mile and 13-mile buffers described above in section 3.2.3 for the northern and southern parcels, respectively (Appendix A, Maps 8 and 9. Impacts to wetlands within the wetland CESA have resulted from past and present actions such as grazing, oil and gas exploration and production, road construction and maintenance, OHV use and recreation, mining and processing activities, aggregate operations, public land management activities, and wildland fire. Reclamation of areas disturbed from past and present actions and natural revegetation have helped lessen these impacts.

The cumulative impact to wetlands and riparian zones from the incremental impact from parcel development following an APD approval, when added to the past actions, present actions, and RFFAs may add effects like those described above in section 3.2.4. However, lease stipulations and conditions of approval, coupled with compliance with state and federally imposed regulations, would help to minimize the level of these incremental impacts.

No Action Alternative
The No Action Alternative would add no incremental impacts to surface water resources in the CESA beyond those occurring under current management. Activities within the CESA would remain on going as permitted on surrounding federal, state, and private lands.

Fish and Wildlife, Special Status Species, Migratory Birds

Proposed Action
The CESA for general wildlife, migratory birds, and special status species consists of a five-mile radius surrounding the parcels. The CESA for big game encompasses portions of big game hunt units 133 and, 134. Cumulative impacts to fish and wildlife, including special status species and migratory birds, would occur only as a result of APD approval and subsequent development, and not from the proposed action of offering the lease parcels. Impacts to wildlife within the CESA from past and present actions include agriculture, road construction and maintenance, off-highway vehicle (OHV) use and recreation, exploration, mining and processing activities, aggregate operations, oil and gas exploration and production, geothermal lease sales, powerlines and other right-of-ways, public land management activities, livestock grazing, wild horses and wildland fire.

Impacts to wildlife from RFFAs could result from recreation, livestock grazing, agricultural use, road construction and maintenance, exploration, aggregate operations, public land management activities, wild horses, and wildland fire. A cumulative indirect impact resulting from groundwater use and consumption from mining, oil and gas development, and agriculture can indirectly affect all wildlife species, in particularly aquatic species.

The cumulative impact on wildlife from the incremental impact of the proposed action when added to the past actions, present actions, and RFFAs would be the additional loss of habitat, habitat fragmentation, displacement, and loss of some individuals. Cumulative impacts to general wildlife were addressed in the

2007 Ely District PRMP/FEIS on pages 4.28-35 – 4.28-37. Cumulative impacts to special status species were addressed in the 2007 Ely District PRMP/FEIS on pages 4.28-38 – 4.28-43. Stipulations applied to the lease parcels would minimize impacts to wildlife.

No Action Alternative
The No Action Alternative would have no additional impact to fish and wildlife, special status species, or migratory birds. Activities on currently leased parcels adjacent to the proposed parcels would remain on-going as permitted on surrounding federal, state, and private lands.

4.3.5. Visual Resource Management

Proposed Action
The actual sale of these parcels would have no cumulative impact on VRM. However, if fluid minerals are discovered and these parcels were to go into production even with design features incorporated there could potentially be incremental cumulative impacts to VRM. Large-scale production within the area would be seen, would attract attention and would dominate the view.

No Action Alternative
The No Action Alternative would have no cumulative impacts to VRM. Activities on currently leased parcels adjacent to the proposed parcels would remain on-going as permitted on surrounding federal, state, and private lands.

4.3.6. Livestock Grazing

Proposed Action
The Proposed Action would result in indirect and cumulative impacts to livestock grazing in the event that an APD is approved and development proceeds. Potential impacts would be analyzed in an additional site-specific NEPA process for any development scenario.

No Action Alternative
The No Action Alternative would have no cumulative impacts to livestock grazing. Activities on currently leased parcels adjacent to the proposed parcels would remain on-going as permitted on surrounding federal, state, and private lands.

4.3.7. Geology and Mineral Extraction

Proposed Action
Exploration and development for locatable minerals, mineral materials, and leasable minerals have occurred near the nominated lands. The RFFD assumes permitting an average of 20 wells for 74 acres of short-term disturbance and 30 acres of long-term disturbance each year since 2008. Therefore, 300 wells and 1110 acres of short-term disturbance and 450 acres of long-term disturbance are assumed to have occurred since 2008. The state of Nevada had only approved 55 APDs between 2008 and 2021. Table 4.1 shows three APDs assumed as future actions totaling 12 acres of predicted disturbance. If 20 wells are permitted as a result of offering these parcels for sale, the total number of wells would be well below the anticipated 300 as described by the RFFD (BLM, 2007). Given the lack of recent oil and gas well drilling in the Ely District, the predicted cumulative impact that could potentially result from development of the nominated lands are likely minor to negligible.

No Action Alternative
The No Action Alternative would have no cumulative impacts to geology and mineral extraction in the area. Activities on currently leased parcels adjacent to the proposed parcels would remain on-going as permitted on surrounding federal, state, and private lands.

4.3.8. Wastes, Hazardous and Solid

Proposed Action
Other major activities potentially generating hazardous and solid waste include mining and existing oil and gas exploration, development and production projects. Given the small acreage of oil and gas activity disturbance identified in the RFFD (9,807), as well as any mitigation developed during additional site-specific analysis for oil and gas exploration and development, the contribution to cumulative impacts would be negligible. Also, federal and state governments specifically regulate each project to ensure that there are no releases of hazardous materials, hazardous waste or solid waste into the environment. As discussed in Section 3.3.11, a slight risk of accidental spillage exists, and the consequences of any spill would be greater in wetlands, springs/seeps, riparian areas, floodplains and seasonally flooded playas.

No Action Alternative
Under the No Action Alternative additional hazardous and solid wastes would not be produced and there would be no cumulative effects. Activities on currently leased parcels adjacent to the proposed parcels would remain on-going as permitted on surrounding federal, state, and private lands.

4.3.9. Environmental Justice

Proposed Action
The oil and gas industry may be perceived as having a negative effect on quality-of-life considerations for people who value undeveloped landscapes, opportunities for isolation, and activities such as wildlife viewing, other forms of recreation, or rangeland management. The total landscape-level surface disturbance associated with reasonably foreseeable environmental trends and planned actions would include activities that generate increased human activity, traffic, noise, dust, odor, light pollution, and visual effects. These activities have the potential to affect quality of life of any existing nearby residences or facilities, depending on the intensity of development activities and proximity of structures to a given parcel. While the majority of these impacts to any significantly proximal residences or facilities would be short term and cease during operations (e.g., increased human activity, traffic, noise, dust, and odor during drilling and completion phases), residences may continue to experience long-term visual or other impacts that have potential to affect quality of life if they are located in areas in which oil and gas development is not currently nearby or visible. Impacts to communities of concern are more likely to be indirect and may incrementally contribute to impacts associated with reasonably foreseeable environmental trends and planned actions.

No Action Alternative
The No Action Alternative would have no cumulative impacts to environmental justice communities in the study area. Activities on currently leased parcels adjacent to the proposed parcels would remain on-going as permitted on surrounding federal, state, and private lands.

4.3.10. Native American Religious and other Concerns

Proposed Action
The Proposed Action could have indirect and cumulative impacts to Native American traditional homelands and sacred sites, if an APD is approved and development proceeds. Prior to the initiation of any ground disturbing activities, construction, or issuance of an APD, all stipulations, conditions, and/or mitigation measures resulting from consultation and coordination would be followed. The Duckwater Shoshone Tribe and Ely Shoshone Tribe, and potentially others, would participate in Government-To-

Government consultation, field visits, monitoring, and review if any of the parcels are leased. Notification and invitations to Consultation will be sent if an APD is submitted. The opportunity for tribes to comment and participate in Government-to-Government consultation is ongoing.

No Action Alternative
The No Action Alternative would have no cumulative impacts to Native American traditional homelands and sacred sites. Activities on currently leased parcels adjacent to the proposed parcels would remain on-going as permitted on surrounding federal, state, and private lands.

4.3.11. Human Health and Safety

Proposed Action
Oil and gas developments, in addition to other extractive activities like gold and copper mining, have been occurring in Nevada for many decades. Continued expansion of the oil and gas industry may be perceived as having a negative effect on quality-of-life considerations for people who value undeveloped landscapes, opportunities for isolation, and activities such as wildlife viewing, other forms of recreation, or rangeland management. The total landscape-level surface disturbance associated with reasonably foreseeable environmental trends and planned actions would include activities that generate increased human activity, traffic, noise, dust, odor, light pollution, and visual effects. These activities have the potential to affect quality of life of any existing nearby residences or facilities, depending on the intensity of development activities and proximity of structures to a given parcel. While the majority of these impacts to any significantly proximal residences or facilities would be short term and cease during operations (e.g., increased human activity, traffic, noise, dust, and odor during drilling and completion phases), residences may continue to experience long-term visual or other impacts that have potential to affect quality of life if they are located in areas in which oil and gas development is not currently nearby or visible.

Human health risk assessments cannot be performed until project-specific details are known so that frequency, timing, and levels of contact with potential stressors may be identified (EPA 2021h). However, each of the reasonably foreseeable environmental trends and planned actions have been, or will be, subject to relevant rules and regulations regarding public health and safety. Ongoing and future potential development would continue to present aggregate risks to human health as detailed above. When wells reach the end of their useful life and are properly plugged and reclaimed, they would no longer contribute to air quality effects; however, depending on the level and duration of individual's exposure during well operation, some of the public health effects from air pollution may endure beyond the life of the wells (e.g., chronic respiratory problems such as asthma).

No Action Alternative
The No Action Alternative would have no cumulative impacts to Human Health and Safety. Activities on currently leased parcels adjacent to the proposed parcels would remain on-going as permitted on surrounding federal, state, and private lands.

Chapter 5. Consultation and Coordination

5.1. Individuals, Organizations, and Tribes Consulted

5.1.1. Individuals and Organizations

The BLM consulted with the following individuals and Organizations prior to the Public Comment Period:

Nevada Department of Wildlife
United States Fish and Wildlife Service

5.1.2. Tribes

The BLM Ely District Office, Bristlecone Field Office, reached out to federally recognized tribal governments, in compliance with Executive Order 13175 Consultation and Coordination with Indian Tribal Governments, by sending notification letters seeking input and inviting tribes to consultation on March 1, 2023. The following Tribes were sent notification letters:

Confederated Tribes of the Goshute Reservation
Duckwater Shoshone Tribe
Ely Shoshone Tribe
Las Vegas Paiute Tribe
Moapa Band of Paiutes
Paiute Indian Tribe of Utah
Koosharem band of Paiute Indians
Kanosh band of Paiute Indians
Shivwits Band of Paiute Indians
Shoshone-Paiute Tribes of the Duck Valley Indian Reservation
Yomba Shoshone Tribe
The Inter-Tribal Council of Nevada
Te-Moak Tribe of Western Shoshone - Elko Band
Moapa Band of Paiutes

Chapter 6. List of Preparers

Table 6.1 List of BLM Preparers

Name	Title	Responsible for the Following Resources
Andrew Gault	Hydrologist	Soil Resources: Prime and Unique, Floodplains, Water Resources: Surface and Ground, Wetlands and Riparian Zones
Frank Giles	Air Resource Specialist	Air Resources, Climate Change
Lizzie Nohr	Wildlife Biologist	T&E Species, Fish and Wildlife, Special Designations, Migratory Birds, Special Status Animal Species
Stacy Holt	Natural Resources Specialist	Mineral Resources/Reclamation
John Miller	Recreation Specialist	Lands with Wilderness Characteristics, Visual Resource Management
Aaron Banes	Geologist	Geology and Mineral Extraction
Matt Fockler	Socioeconomic Specialist	Environmental Justice and Socioeconomic Concerns
Michael Strother	Realty Specialist	Lands And Realty
Ian Collier	Range Management Specialist	Livestock Grazing
Robert Nash	Archaeologist	Cultural Resources, Heritage Special Designations, Paleontology
Elizabeth Nash	Native American Tribal Coordinator	Native American Religious Concerns, Tribal Coordination
Concetta Brown	Planning and Environmental Coordinator	Project Manager

Chapter 7. References

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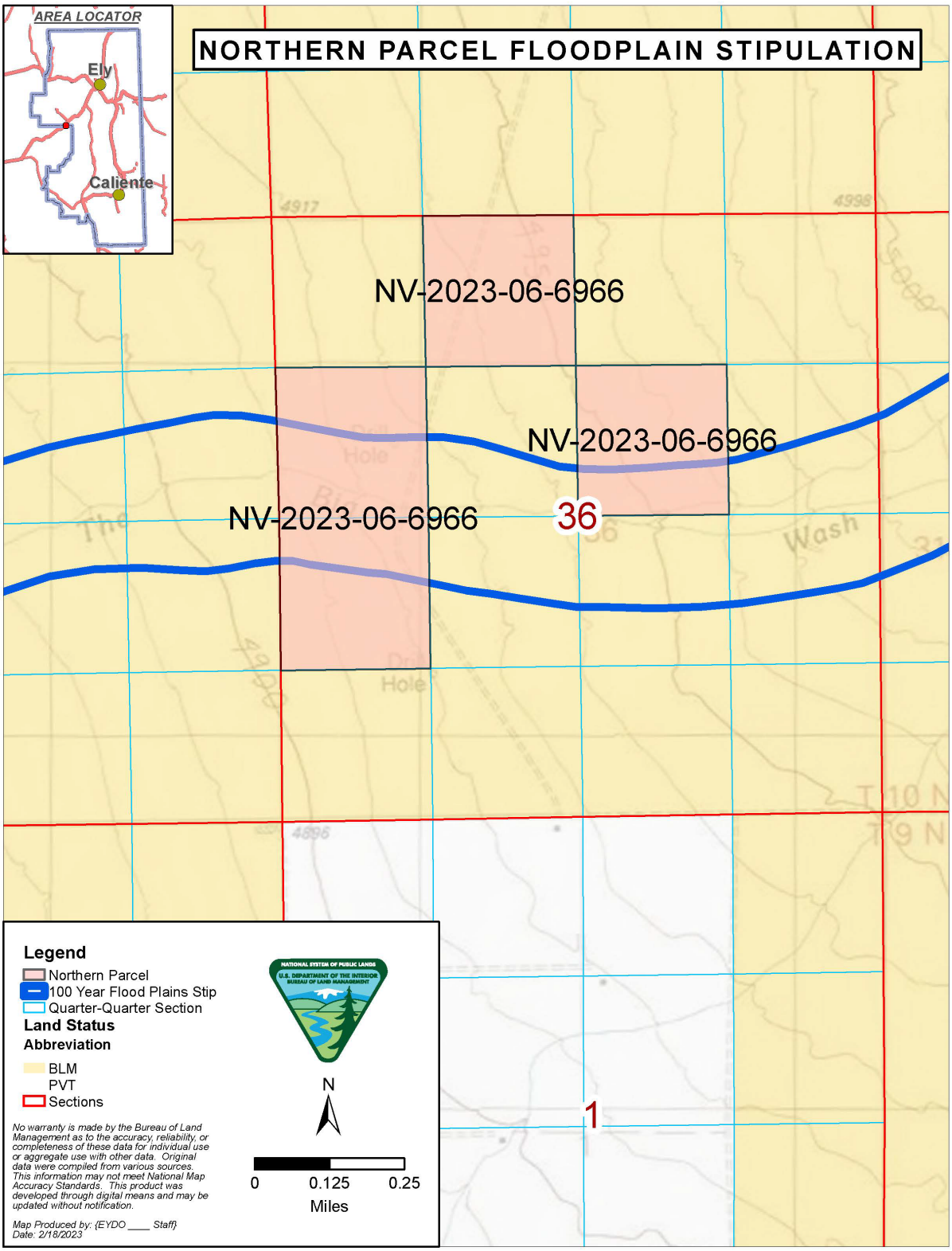
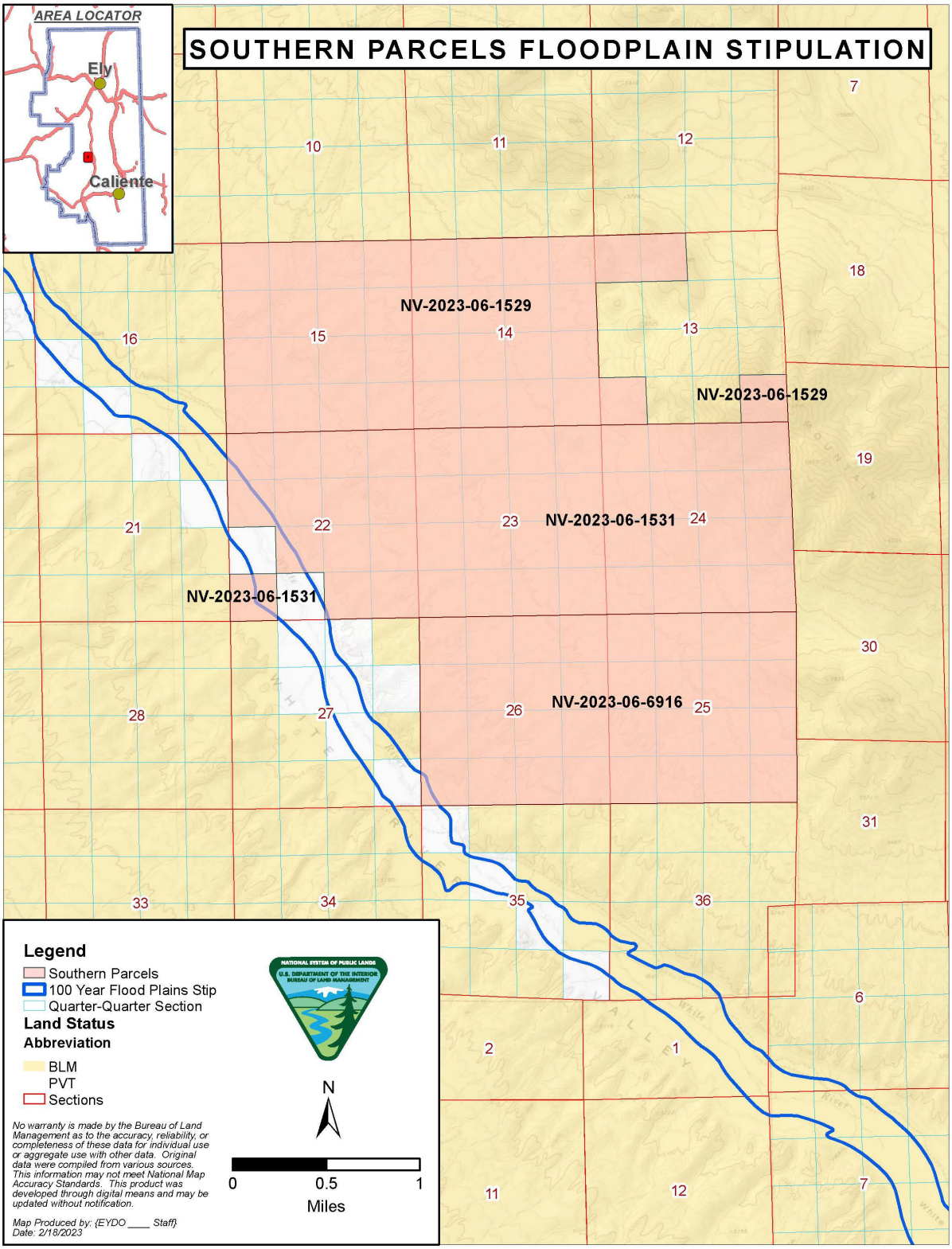
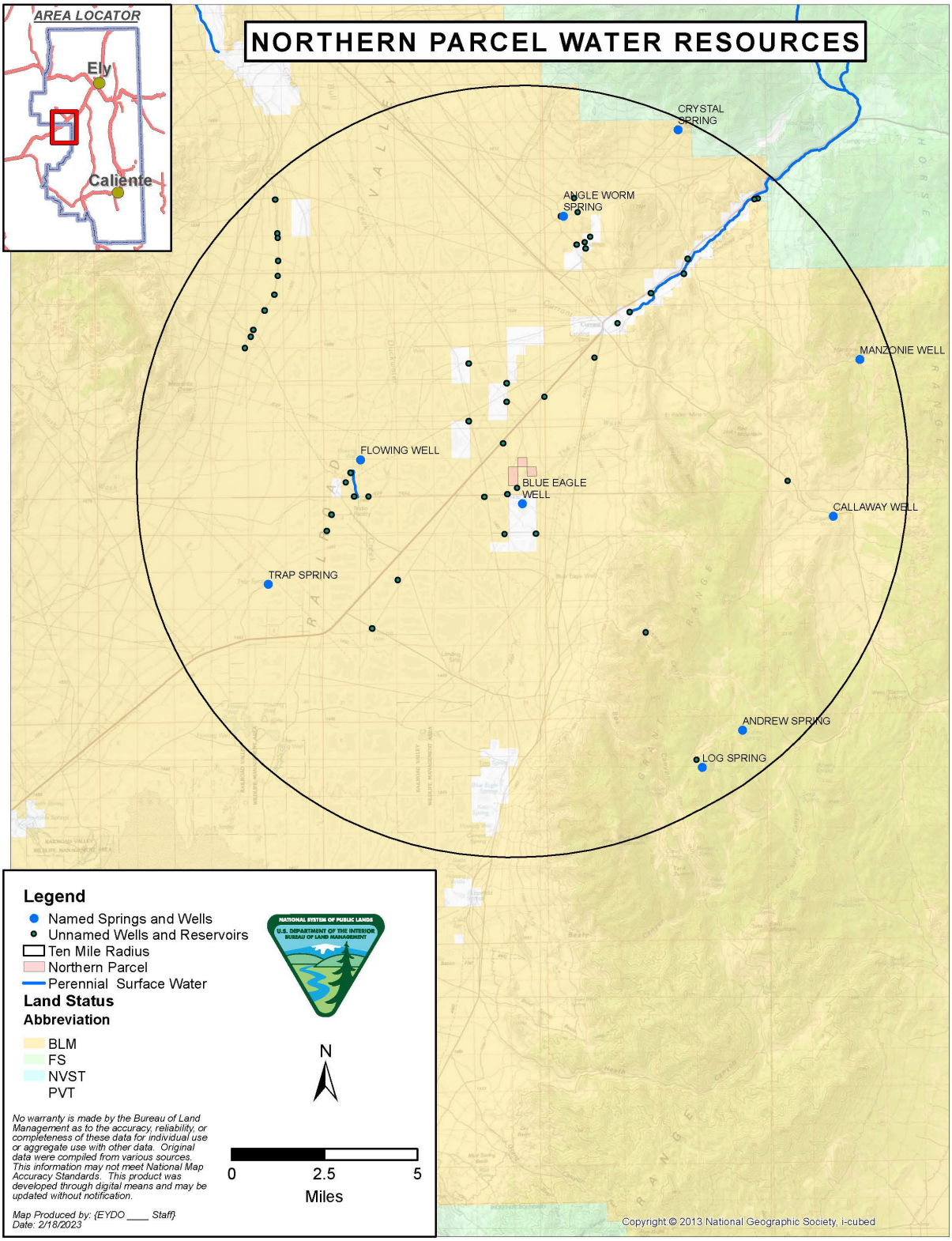
Appendix A-Maps



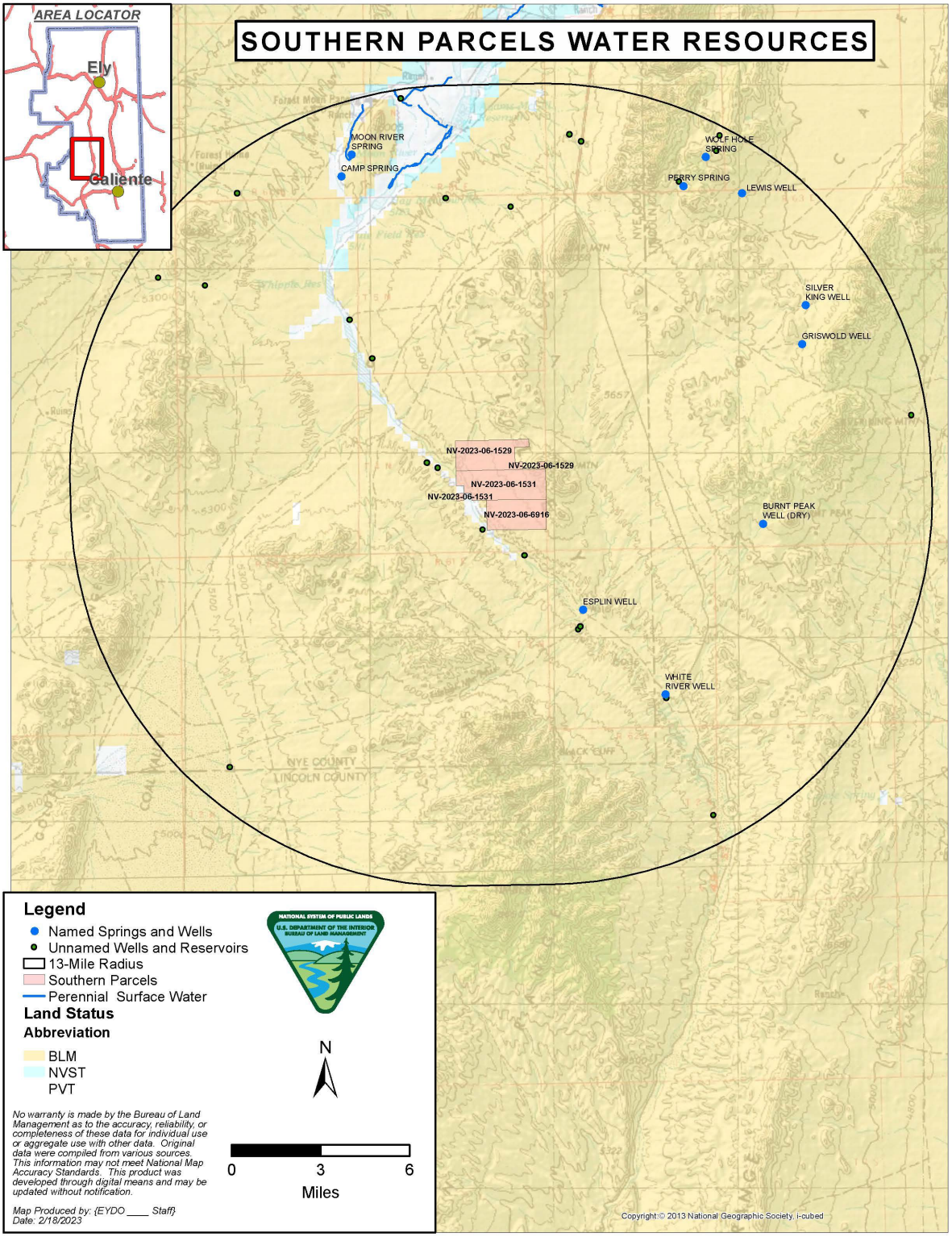
Map 4. Map showing outline of Floodplain Stipulation #NV-L-10-C-NSO to be applied to parcel NV-2023-6966. See Appendix D for a listing of the stipulation legal descriptions.



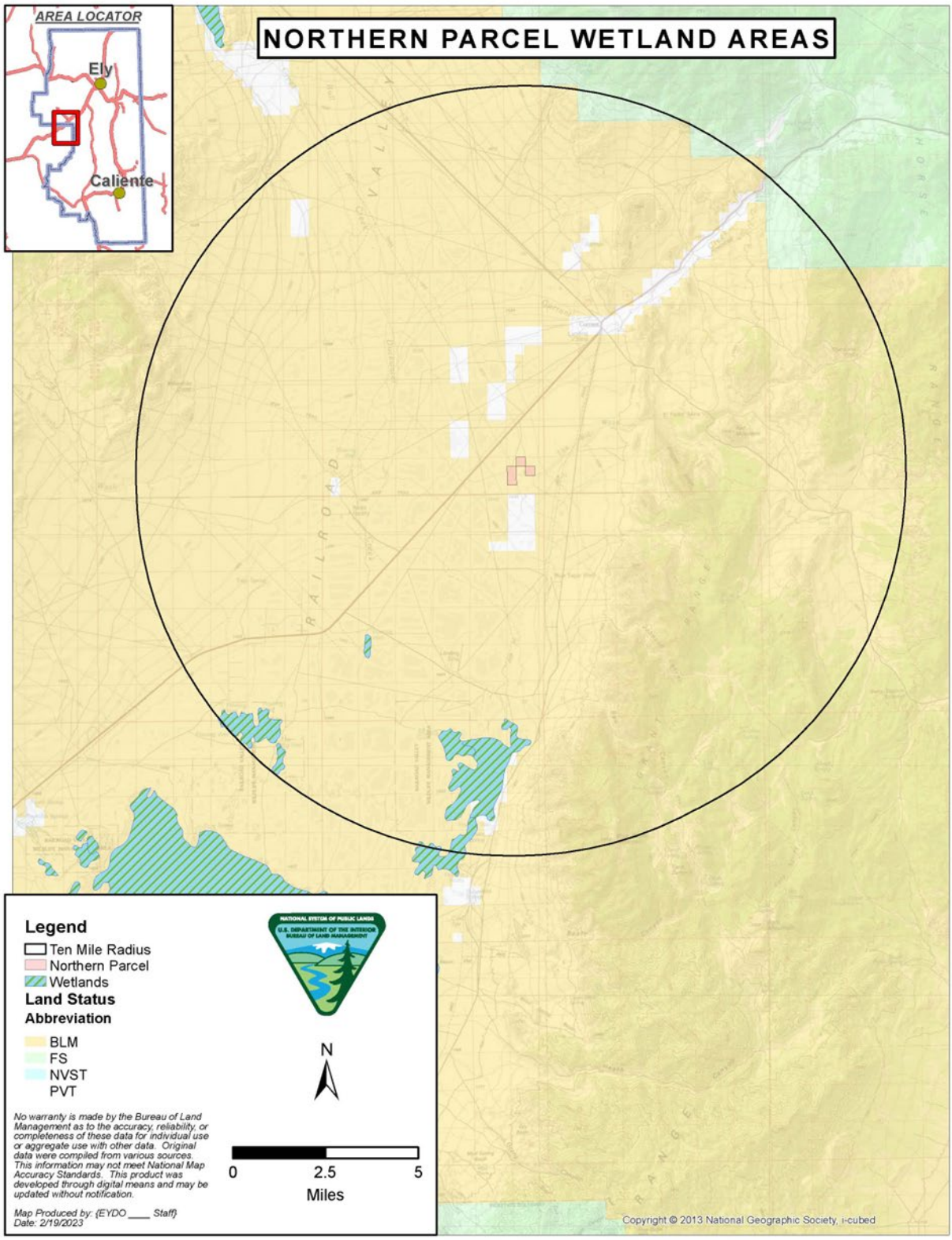
Map 5. Map showing outline of Floodplain Stipulation #NV-L-10-C-NSO to be applied to parcels NV-2023-1531 and 6916. See Appendix D for a listing of the stipulation legal descriptions.



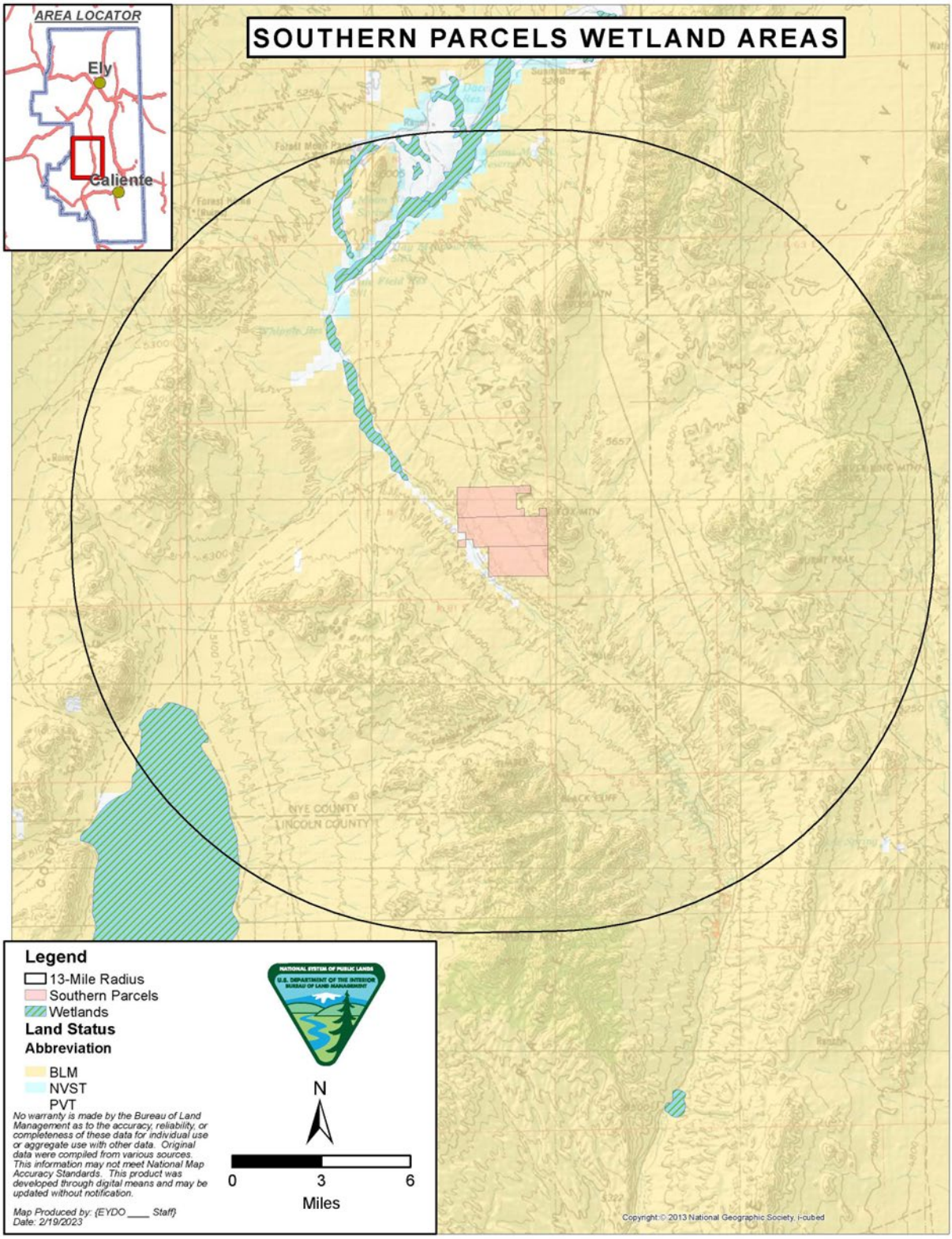
Map 6. Map showing a ten-mile radius encompassing groundwater and surface water resources around the northern parcel. This buffer also serves as the north parcel water resources CESA.



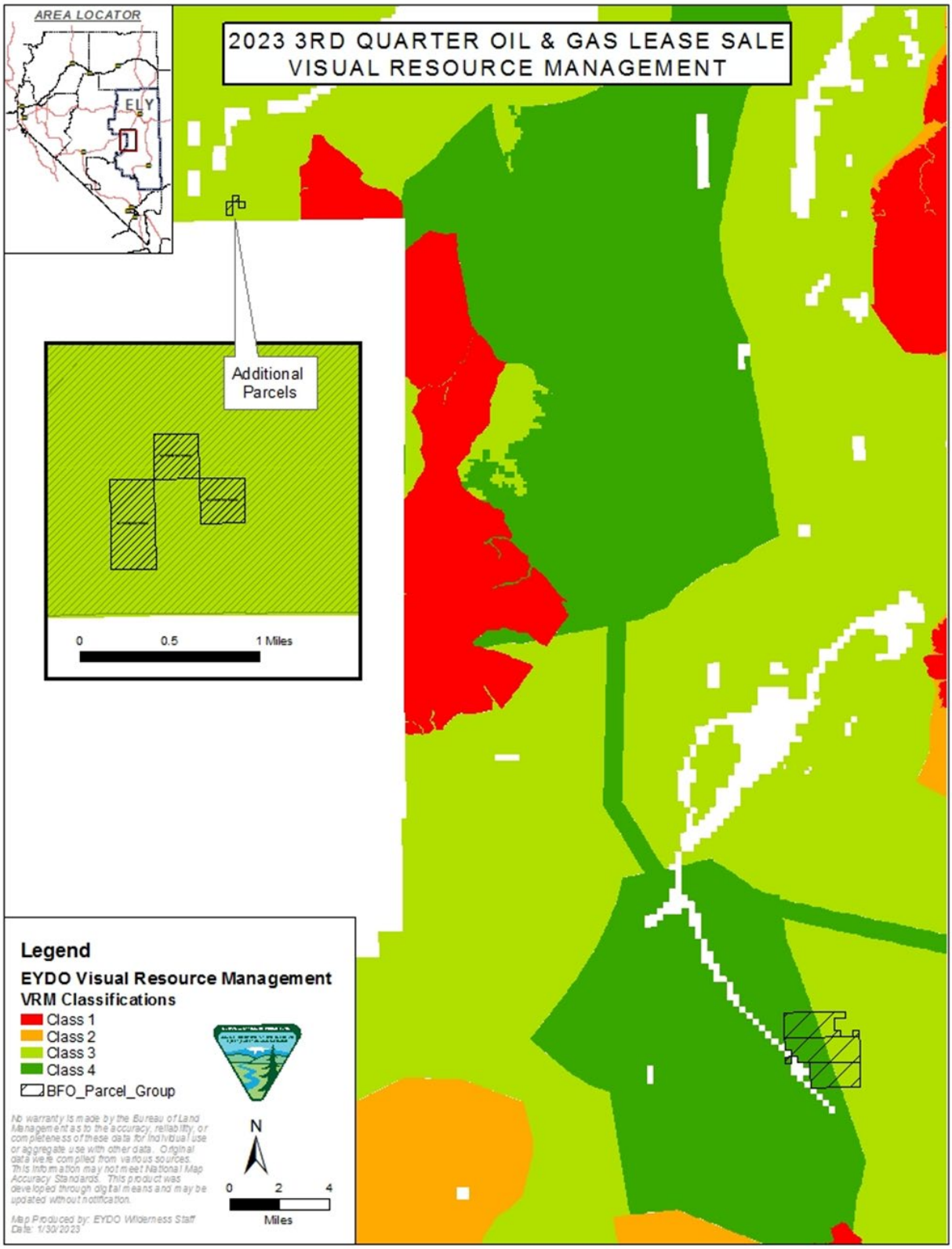
Map 7. Map showing a 13-mile radius encompassing groundwater and surface water resources around the southern parcels. The radius of this buffer was increased relative to the northern parcel buffer to accommodate the larger combined area of the southern parcels. This buffer also serves as the southern parcel water resources CESA.



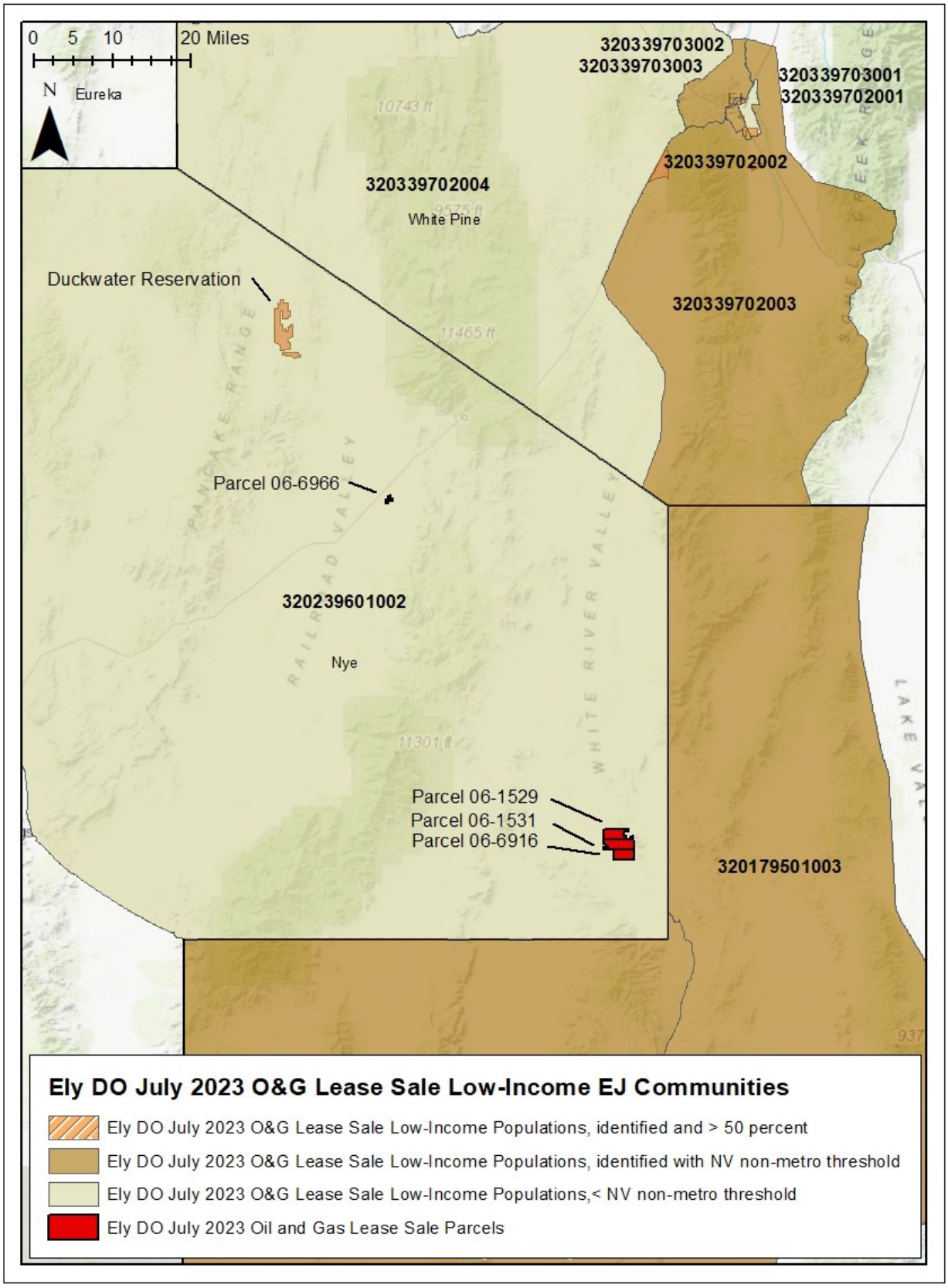
Map 8. Map showing the 10-mile buffer encompassing some of the wetland in the region around the northern parcel. This buffer also serves as the northern parcels wetlands CESA.



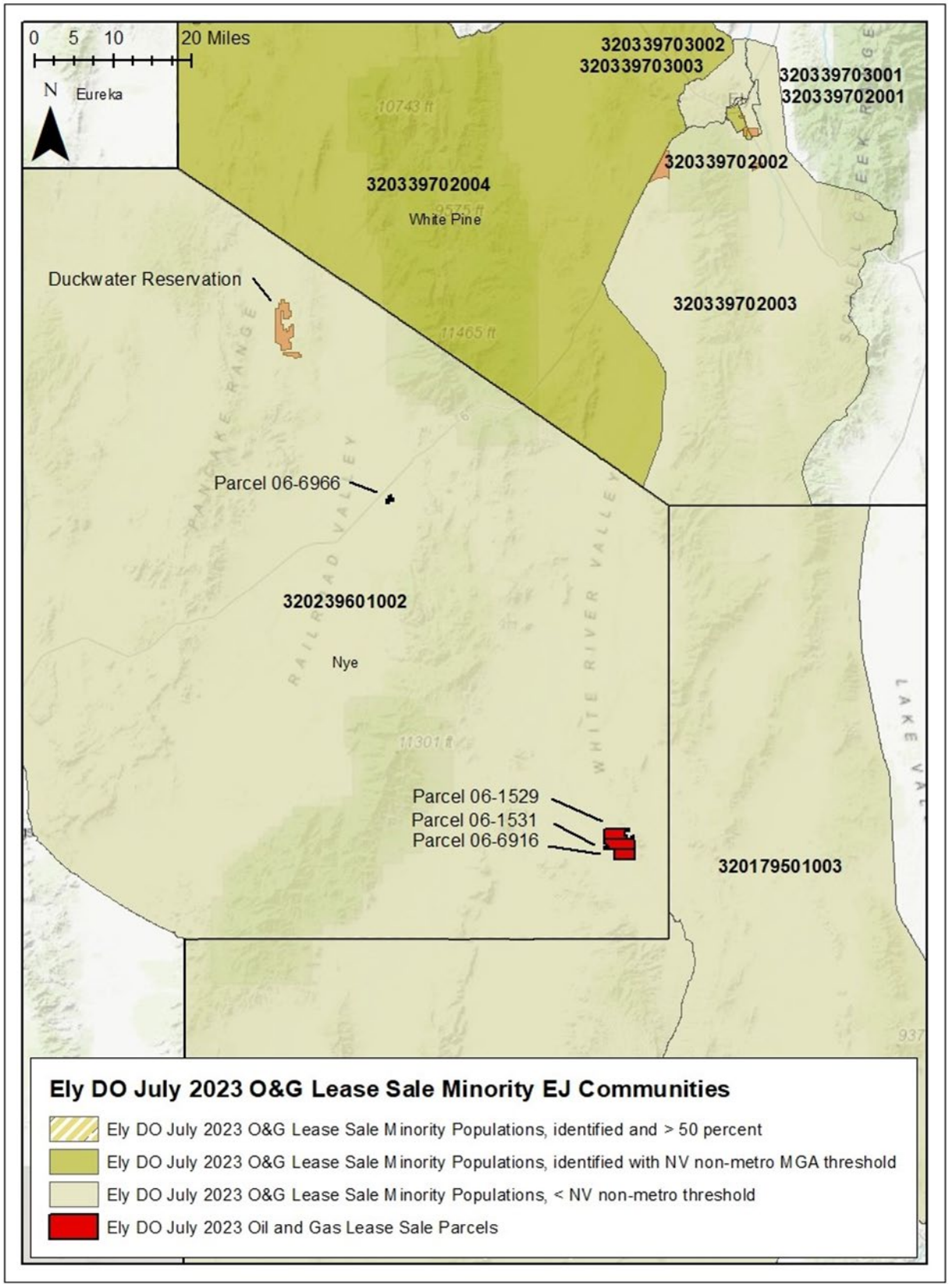
Map 9. Map showing a 13-mile radius encompassing some of the wetlands in the region around southern parcels. This buffer also serves as the southern parcels wetlands CESA.



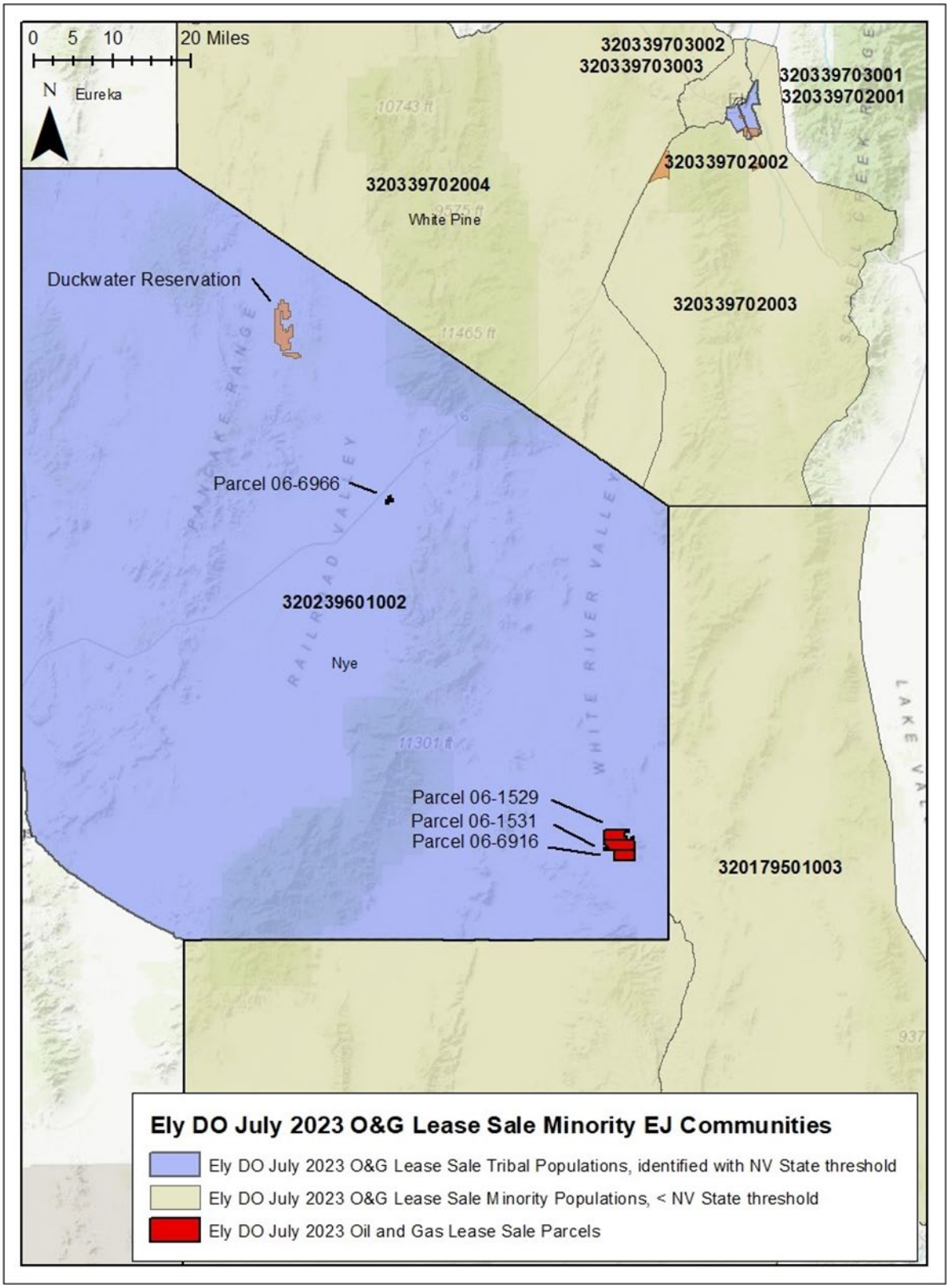
Map 10. VRM analysis map for the proposed parcels.



Map 11. Ely DO July 2023 O&G Lease Sale Low-Income Environmental Justice Communities



Map 12. Ely DO July 2023 O&G Lease Sale Minority Environmental Justice Communities



Map 13. Ely DO July 2023 O&G Lease Sale Tribal Environmental Justice Communities

Appendix B-Supporting Tables

Table B1. BLM Special Status Species

Common Name	Scientific Name
Golden eagle	*Aquila chrysaetos*
Short-eared owl	*Asio flammeus*
Western burrowing owl	*Athene cunicularia hypugaea*
Ferruginous hawk	*Buteo regalis*
Pinyon jay	*Gymnorhinus cyanocephalus*
Loggerhead shrike	*Lanius ludovicianus*
Long-billed curlew	*Numenius americanus*
Sage thrasher	*Oreoscoptes montanus*
Brewer's sparrow	*Spizella breweri*
Northern goshawk	*Accipiter gentilis*
Peregrine falcon	*Falco peregrinus*
Sandhill crane (Greater)	*Grus canadensis*
Railroad Valley springfish*	*Crenichthys nevadae*
Railroad Valley tui chub	*Siphateles bicolor*
White River spinedace*	*Lepidomeda albivallis*
Northern leopard frog	*Lithobates pipiens*
Railroad Valley toad	*Bufo nevadensis*
Pallid bat	*Antrozous pallidus*
Pygmy rabbit	*Brachylagus idahoensis*
Townsend's big-eared bat	*Corynorhinus townsendii*
Big brown bat	*Eptesicus fuscus*
Spotted bat	*Euderma maculatum*
Silver-haired bat	*Lasionycteris noctivagans*
Hoary bat	*Lasiurus cinereus*
Dark kangaroo mouse	*Microdipodops megacephalus*
California myotis	*Myotis californicus*
Western small-footed myotis	*Myotis ciliolabrum*
Long-eared myotis	*Myotis evotis*
Long-legged myotis	*Myotis volans*
Fringed myotis	*Myotis thysanodes*
Big free-tailed bat	*Nyctinomops macrotis*
Canyon bat	*Pipistrellus hesperus*
Brazilian free-tailed bat	*Tadarida brasiliensis*
Little brown myotis	*Myotis lucifugus*
Pocket gopher	*Thomomys bottae*
Great Basin collared lizard	*Crotaphytus bicinctores*
Long-nosed leopard lizard	*Gambelia wislizenii*
Greater short-horned lizard	*Phyrnosoma hernandesi*
Desert horned lizard	*Phyrnosoma platyrhinos*
Toquerville springsnail	*Pyrgulopsis kolobensis*
Lockes pyrg	*Pyrgulopsis lockensis*
White River Valley pyrg	*Pyrgulopsis sathos*
Flag pyrg	*Pyrgulopsis breviloba*
Pahranagat pebblesnail	*Pyrgulopsis merriami*

Common Name	Scientific Name
Butterfield pyrg	*Pyrgulopsis lata*
White River wood nymph	*Cercyonis pegala pluvialis*
Eastwood milkweed	*Asclepias eastwoodiana*
Tiehm's blazing star	*Mentzilia tiehmi*
Railroad Valley globemallow	*Sphaeralcea caespitosa var. williamsiae*
Currant milkvetch	*Astragalus uncialis*

[+] Parcels will be re-evaluated for potential special status species at the time the BLM receives an APD. This list provides species that may potentially occur during the leasing period.
[*] Federally threatened species

Table B2. Affected Grazing Allotments in Proposed Action - December 2023 3rd Quarter Oil & Gas Lease Sale Area

Affected Grazing Allotment Name and (Allotment Number)	Total Overall Allotment Acres	Parcel(s) ID parcels on the allotment	Percent of Allotment Affected by Proposed Lease Parcel Overlap	Affected Use Area(s) / Pasture(s) of Affected Allotment	Total Overall Area of Affected Pasture or Use Area (Acres)	Percent of Affected Pasture or Use Area Affected by Proposed Lease Parcel Overlap
Duckwater (NV00701)	849,147	NV-2023-07-6966	0.019%	Red Mountain/ Callaway Well Use Area	74,349	0.217%
Fox Mountain (NV11001)	73,557	NV-2023-07-1529; NV-2023-07-1531	0.195%	West Fox Mountain	27,870	0.515%
Sunnyside (NV21023)	226,159	NV-2023-07-1529; NV-2023-07-1531; NV-2023-07-6916	1.98%	White River	111,676	4.013%

Appendix C -Nominated Parcels

July 2023 Oil & Gas Lease Sale Parcel List

NV-2023-07-6966
NV, Ely District Office, Bureau of Land Management, PD
T. 10 N., R. 57 E., MOUNT DIABLO MER
Sec. 36 SW1/4NE1/4, NE1/4NW1/4, SW1/4NW1/4, NW1/4SW1/4.
Nye County
160 Acres
EOI# NV00017748

NV-2023-07-1529
NV, Ely District Office, Bureau of Land Management, PD
T. 4 N., R. 61 E., MOUNT DIABLO MER
Sec. 13 N1/2NW1/4, SW1/4SW1/4, SE1/4SE1/4;
Sec. 14 ALL;
Sec. 15 ALL.
Nye County
1440 Acres
EOI# NV00016306

NV-2023-07-1531
NV, Ely District Office, Bureau of Land Management, PD
T. 4 N., R. 61 E., MOUNT DIABLO MER
Sec. 22 N1/2, SW1/4SW1/4, NE1/4SW1/4, SE1/4;
Sec. 23 ALL;
Sec. 24 ALL.
Nye County
1840 Acres
EOI# NV00016307

NV-2023-07-6916
NV, Ely District Office, Bureau of Land Management, PD
T. 4 N., R. 61 E., MOUNT DIABLO MER
Sec. 25 ALL;
Sec. 26 ALL.
Nye County
1280 Acres
EOI# NV00016308

Appendix D-Stipulations and Lease Notices

Stipulations and Lease Notices

Stipulations are restrictions that are included in the current applicable land use plan – the Ely District RMP.

Lease Notices serve to inform prospective lessees of other regulatory authorities that may apply to a parcel.

BLM Nevada Standard Lease Notices (#NV-L-00-A-LN)

These stipulations and notices apply to all parcels all lands and represent standard Best Management Practices for ensuring compliance with extant Federal Laws and resource protection.

T&E, Sensitive and Special Status Species

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 will contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity 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.

Migratory Birds

The Operator is responsible for compliance with provisions of the Migratory Bird Treaty Act by implementing measures to prevent take of migratory birds. Operators should be aware that any ground clearing or other disturbance (such as creating cross-country access to sites, drilling, and/or construction) during the migratory bird (including raptors) nesting season (March 1 - July 31) risks a violation of the Migratory Bird Treaty Act. Disturbance to nesting migratory birds should be avoided by conducting surface disturbing activities outside the migratory bird nesting season. If surface disturbing activities must be implemented during the nesting season, a preconstruction survey for nesting migratory birds should be performed by a qualified wildlife biologist, during the breeding season (if work is not completed within a specified time frame, then additional surveys may be needed). If active nests are found, an appropriately-sized no surface disturbance buffer determined in coordination with the BLM biologist should be placed on the active nest until the nesting attempt has been completed. If no active nests are found, construction activities must occur within the survey validity time frame specified in the conditions of approval.

Cultural Resources and Tribal Consultation

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, 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. 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.

Fossils

This area has low to moderate potential for vertebrate paleontological resources, unless noted to have higher potential in a separate stipulation. This area may contain vertebrate paleontological resources. Inventory and/or on-site monitoring during disturbance or spot checking may be required of the operator. In the event that previously undiscovered paleontological resources are discovered in the performance of any surface disturbing activities, the item(s) or condition(s) will be left intact and immediately brought to the attention of the authorized officer of the BLM. Operations within 250 feet of any such discovery will not be resumed until written authorization to proceed is issued by the Authorized Officer. The lessee will bear the cost of any required paleontological appraisals, surface collection of fossils, or salvage of any large conspicuous fossils of significant scientific interest discovered during the operations.

Water

The Operator is responsible for compliance with provisions of the Clean Water Act, Safe Drinking Water Act, and applicable State laws and regulations regarding protection of state water resources. Operators should contact Nevada Division of Water Resources and Nevada Division of Environmental Protection regarding necessary permits and compliance measures for any construction or other activities.

Mining Claims

This parcel may contain existing mining claims and/or mill sites located under the 1872 Mining Law. To the extent it does, the oil and gas lessee must conduct its operations, so far as reasonably practicable, to avoid damage to any known deposit of any mineral for which any mining claim on this parcel is located, and should not endanger or unreasonably or materially interfere with the mining claimant's operations, including any existing surface or underground improvements, workings, or facilities which may have been made for the purpose of mining operations. The provisions of the Multiple Mineral Development Act (30 U.S.C. 521 et seq.) shall apply on the leased lands.

Fire

The following precautionary measures should be taken to prevent wildland fires. In the event your operations should start a fire, you could be held liable for all suppression costs.

- All vehicles should carry fire extinguishers and a minimum of 10 gallons of water.
- Adequate fire-fighting equipment i.e. shovel, Pulaski, extinguisher(s) and a minimum 10 gallons of water should be kept at the drill site(s).
- Vehicle catalytic converters should be inspected often and cleaned of all brush and grass debris.
- When conducting welding operations, they should be conducted in an area free from or mostly free from vegetation. A minimum of 10 gallons water and a shovel should be on hand to extinguish any fires created from the sparks. Extra personnel should be at the welding site to watch for fires created by welding sparks.
- Report wildland fires immediately to the BLM Eastern Nevada Interagency Dispatch Center at (775) 289-1925. Helpful information to report is location (latitude and longitude if possible), what's burning, time started, who/what is near the fire and direction of fire spread.
- When conducting operations during the months of June through September, the operator must contact the BLM Ely District Office, Division of Fire and Aviation at (775 289-1925) to find out about any fire restrictions in place for the area of operation and to advise this office of approximate beginning and ending dates for your activities.

Wild Horse and Burro
(NV-L-05-A-LN)

Wild horse or burro herds are known to use some or all of the proposed lease area. If proposed fluid mineral activities are to occur in a Herd Management Area (HMA) or a Herd Area (HA) the BLM Authorized Officer may identify mitigation measures necessary for reducing adverse impacts to wild horses and/or burros. These measures would be designed so as to not hinder the wild and free-roaming behavior of the horses and burros and may include, but are not limited to, providing alternative water sources for horses of equal quality and quantity as well as fencing to prevent access to project area.

Additional specific measures to protect horses and burros may be developed during review of proposals.

Parcel #	**Legal Land Description**
	Mount Diablo Meridian, Nevada
NV-2023-07-1529	ALL LANDS
NV-2023-07-1531	ALL LANDS
-NV-2023-07-6916	ALL LANDS

100-year Flood Plains

(#NV-L-10-C-NSO)

Stipulation: No Surface Occupancy (NSO) on 100-year flood plains of major rivers that have a one percent chance of flooding in any given year.
Objective [Purpose]: To protect the unique biological and hydrological features associated with 100-year flood plains of major rivers.
Exception: The Authorized Officer may grant an exception if an environmental review determines that the action, as proposed or otherwise restricted, does not affect the resource. An exception may also be granted if the proponent, BLM, and other affected interests (e.g. NDOW) negotiate mitigation that would satisfactorily offset the anticipated negative impacts. Actions designed to enhance the long-term utility or availability of the protected resource may be exempted from the otherwise applicable restriction.
Modification: The Authorized Officer may modify the size and shape of the restricted area if an environmental analysis indicates the actual suitability of the land for the resource differs from that in the otherwise applicable restriction.
Waiver: The restriction may be waived if it is determined that the described lands do not contain the subject resource or are incapable of serving the requirements of the resource and therefore no longer warrant consideration as a component necessary for protection of the resource.

Parcel #	**Legal Land Description**
	Mount Diablo Meridian, Nevada
NV-2023-06-1531	T.0040N, R.0610E SEC. 022 SWNW, NESW, SWSW
NV-2023-06-6916	T.0040N, R.0610E SEC. 026 SWSW
NV-2023-06-6966	T.0100N, R.0570E SEC. 036 SWNE, SWNW, NWSW

Appendix E-Ely District Best Management Practices for Oil & Gas

Air Resources

- Use dust abatement techniques on unpaved, un-vegetated surfaces to minimize airborne dust.
- Post and enforce speed limits (e.g., 25 miles per hour) to reduce airborne fugitive dust.
- Cover construction materials and stockpiled soils if they are a source of fugitive dust.
- Use dust abatement techniques before and during surface clearing, excavation, or blasting activities.

Water Resources

- Avoid the application of fire retardant or foam within 300 feet of a stream channel or waterway, when possible, except for the protection of life and property. Aerial application and use of retardants and foams would be consistent with national policy guidelines established by the National Office of Fire and Aviation, as amended.
- Fire engines that have surfactant foam mixes in tanks must be fitted with an anti-siphon (back flow protection valve) if filled directly from a stream channel.
- Construct a containment barrier around all pumps and fuel containers utilized within 100 feet (30.5 meters) of a stream channel. The containment barrier would be of sufficient size to contain all fuel being stored or used on site.
- Prior to use on lands administered by the Ely Field Office, all fire suppression equipment from outside the planning area utilized to extract water from lakes, streams, ponds, or spring sources (e.g., helicopter buckets, draft hoses, and screens) will be thoroughly rinsed to remove mud and debris and then disinfected to prevent the spread of invasive aquatic species. Rinsing equipment with disinfectant solution will not occur within 100 feet of natural water sources (i.e., lakes, streams, or springs). Ely suppression equipment utilized to extract water from water sources known to be contaminated with invasive aquatic species, as identified by the U.S. Fish and Wildlife Service and Nevada Department of Wildlife, also will be disinfected prior to use elsewhere on lands administered by the Ely Field Office.
- Do not dump surfactant foam mixes from fire engines within 600 feet of a stream channel.
- Do not conduct fire retardant mixing operations within 600 feet of a stream channel.
- Remove all modifications made to impound or divert stream flow by mechanical or other means to facilitate extraction of water from a stream for fire suppression efforts when suppression efforts are completed.
- When drafting or dipping water during fire operations, continuously monitor water levels at the site that water is being removed from. Do not allow water extraction to exceed the ability of the recharge inflow to maintain the water levels that exist at the time initial attack efforts began. If the water level drops below this predetermined level, all water removal would cease immediately until water levels are recharged.
- When possible, do not cross or terminate fire control lines at the stream channel. Terminate control lines at the edge of the riparian zone at a location determined appropriate to meet fire suppression objectives based on fire behavior, vegetation/fuel types, and fire fighter safety.
- Construct access roads and fords that cross stream channels to BLM road standards.
- Do not construct new roads or mechanical fire control lines or improve existing roads within 300 feet of a stream channel unless authorized by the BLM Field Manager or Authorized Officer.
- Limit stream crossings on travel routes and trails to the minimal number necessary to minimize sedimentation and compaction. The BLM Authorized Officer will determine if any impacts need to be rehabilitated by the permittee.
- Conduct mixing of herbicides and rinsing of herbicide containers and spray equipment only in areas that are a safe distance from environmentally sensitive areas and points of entry to bodies of water (storm drains, irrigation ditches, streams, lakes, or wells).
- A water well may be accepted by the BLM Ely Field Office upon completion of operations. The BLM authorized officer will make the determination whether to accept the well based upon the

submission of the well completion forms and relevant hydrogeologic data reports. The well must be installed by drillers licensed by the state of Nevada according to specifications in Nevada Revised Statutes Title 48, Chapter 534.

Soil Resources

- Require the use of specialized low-surface impact equipment (e.g., balloon tired vehicles) or helicopters, as determined by the BLM Authorized Officer, for activities in off-road areas where it is deemed necessary to protect fragile soils and other resource values.
- During periods of adverse soil moisture conditions caused by climatic factors such as thawing, heavy rains, snow, flooding, or drought, suspend activities on existing roads that could create excessive surface rutting. When adverse conditions exist, the operator would contact the BLM Authorized Officer for an evaluation and decision based on soil types, soil moisture, slope, vegetation, and cover.
- When preparing the site for reclamation, include contour furrowing, terracing, reduction of steep cut and fill slopes, and the installation of water bars, as determined appropriate for site- specific conditions.
- Upon completion or temporary suspension of mining operations, backfill all holes and trenches and re-contour the pit to the natural slope, if possible, with pit walls greater than 3 feet in height knocked down and sloped at 3 horizontal to 1 vertical or to the original topography, whichever is less.
- Restoration requirements include reshaping, re-contouring, and/or resurfacing with topsoil, installation of water bars, and seeding on the contour. Removal of structures such as culverts, concrete pads, cattle guards, and signs would usually be required. Fertilization and/or fencing of the disturbance may be required. Additional erosion control measures (e.g., fiber matting and barriers) to discourage road travel may be required.

Vegetation Resources

- Where seeding is required, use appropriate seed mixture and seeding techniques approved by the BLM Authorized Officer.
- The BLM Authorized Officer will specify required special handling and recovery techniques for Joshua trees, yucca, and some cactus in the southern part of the planning area on a site- specific basis.
- Keep removal and disturbance of vegetation to a minimum through construction site management (e.g., using previously disturbed areas and existing easements, limiting equipment/materials storage and staging area sites, etc.).
- Generally, conduct reclamation with native seeds that are representative of the indigenous species present in the adjacent habitat. Document rationale for potential seeding with selected nonnative species. Possible exceptions would include use of nonnative species for a temporary cover crop to out-complete weeds. In all cases, ensure seed mixes are approved by the BLM Authorized Officer prior to planting.
- Certify that all interim and final seed mixes, hay, straw, and hay/straw products are free of plant species listed on the Nevada noxious weed list.
- An area is considered to be satisfactorily reclaimed when all disturbed areas have been recontoured to blend with the natural topography, erosion has been stabilized, and an acceptable vegetative cover has been established. Use the Nevada Guidelines for Successful Revegetation prepared by the Nevada Division of Environmental Protection, the BLM, and the U.S. Department of Agriculture Forest Service (or most current revision or replacement of this document) to determine if revegetation is successful.
- Reclamation bond release criteria would include the following:
- The perennial plant cover of the reclaimed area would equal or exceed perennial cover of selected

comparison areas (normally adjacent habitat). If the adjacent habitat is severely disturbed, an ecological site description may be used as a cover standard. Cover is normally crown cover as estimated by the point intercept method. Selected cover can be determined using a method as described in Sampling Vegetation Attributes, Interagency Technical Reference, 1996, BLM/RS/ST-96/002+1730. The reclamation plan for the area project would identify the site-specific release criteria and associated statistical methods in the reclamation plan or permit.

- Utility companies will manage vegetation in their rights-of-way for safe and reliable operation while maintaining vegetation and wildlife habitat.
- Re-spread weed-free vegetation removed from the right-of-way to provide protection, nutrient recycling, and seed source.

Fish and Wildlife

- Install wildlife escape ramps in all watering troughs, including temporary water haul facilities, and open storage tanks. Pipe the overflow away from the last water trough on an open system to provide water at ground level.
- As appropriate, mark certain trees on BLM-administered lands for protection as wildlife trees.
- Consider seasonal distribution of large wildlife species when determining methods used to accomplish weed and insect control objectives.
- Protect active raptor nests in undisturbed areas within 0.25 mile of areas proposed for vegetation conversion using species-specific protection measures. Inventory areas containing suitable nesting habitat for active raptor nests prior to the initiation of any project.
- When used to pump water from any pond or stream, screen the intake end of the draft hose to prevent fish from being ingested. Screen opening size would be a maximum of 3/16 inch (4.7 millimeters).
- Special recreation use permittees will take action to ensure that race participants and spectators do not harass wildlife.

Special Status Species

- Avoid line-of-sight views between the power poles along powerlines and sage grouse leks, whenever feasible.
- Use current science, guidelines, and methodologies (Avian Power Line Interaction Committee 1994, 1996, 2005) for all new and existing powerlines to minimize raptor and other bird electrocution and collision potential.
- When managing weeds in areas of special status species, carefully consider the impacts of the treatment on such species. Wherever possible, hand spraying of herbicides is preferred over other methods.
- Do not conduct noxious and invasive weed control within 0.5 mile of nesting and brood rearing areas for special status species during the nesting and brood rearing season.
- To the greatest extent possible, survey all mine adits and shafts slated for closure for bat presence and use prior to being closed. Minimize impacts to bat roosts and bat habitat through the use of current science, guidelines, and methodologies when closing and abandoning mine adits.
- Develop grazing systems to minimize conflicts with special status species habitat.
- For streams currently occupied by any special status species, do not allow extraction of water from ponds or pools if stream inflow is minimal (i.e., during drought situations) and extraction of water would lower the existing pond or pool level.
- When new spring developments are constructed on BLM lands and BLM has the authority to design the project, the source and surrounding riparian area will be fenced, the spring will be developed in a manner that leaves surface water at the source and maintains the associated riparian area, water will be provided outside the exclosure in a manner that provides drinking water for large ungulates, wild horses, and/or livestock so they are less likely to break into the

exclosure.

- Salt and mineral supplements:
    - Base placement of salt and mineral supplements on site-specific assessment.
    - Normally place salt and mineral supplements at least 0.5 mile away from riparian areas, sensitive sites, populations of special status plant species, cultural resource sites.
    - Place salt at least 0.5 mile from any water source including troughs.
    - Place salt and mineral supplements at least 1 mile from sage grouse leks.

  Water hauling:

    - Place water haul sites at least 0.5 mile a way from riparian areas, cultural sites, and special status species locations.
    - Limit water hauling to existing roads when possible.

Wild Horses

- To protect wild horses and wildlife flag all new fences every 16 feet with white flagging that is at least 1 inch wide and has at least 12 inches hanging free from the top wire of the fence.
- If a project involves heavy or sustained traffic, require road signs for safety and protection of wild horses and wildlife.

Cultural Resources

- Ensure that all activities associated with the undertaking, within 100 meters of the discovery, are halted and the discovery is appropriately protected, until the BLM authorized officer issues a Notice to Proceed. A Notice to Proceed may be issued by the BLM under any of the following conditions:
    - Evaluation of potentially eligible resource(s) results in a determination that the resource(s) are not eligible;
    - The fieldwork phase of the treatment option has been completed; and
    - The BLM has accepted a summary description of the fieldwork performed and a reporting schedule for that work.
- The operator will inform all persons associated with the project that knowingly disturbing cultural resources (historic or archaeological) or collecting artifacts is illegal.
- The BLM may approve cross-country operations of seismic trucks and support vehicles on bare frozen ground or over sufficient snow depth (vehicle traffic does not reveal the ground) so as to prevent surface disturbance.
- Perform viewshed reclamation when the setting of a site contributes to the significance of the property.

Paleontological Resources

When paleontological resources of potential scientific interest are encountered (including all vertebrate fossils and deposits of petrified wood), leave them intact and immediately bring them to the attention of the BLM Authorized Officer.

Visual Resources

- On industrial facilities authorized by the Ely Field Office, utilize anti-glare light fixtures to limit light pollution.
- During the implementation of vegetation treatments, create irregular margins around treatment areas to better maintain the existing scenic character of the landscape.
- When feasible, bury utility lines on public land when in the viewshed of residential or community development.

Travel Management and Off-highway Vehicle Use

- Design access roads requiring construction with cut and fill to minimize surface disturbance and take into account the character of the landform, natural contours, cut material, depth of cut, where the fill material would be deposited, resource concerns, and visual contrast. Avoid construction of access roads on steep hillsides and near watercourses where alternate routes provide adequate access.
- Where adverse impacts or safety considerations warrant, limit or prohibit public access when authorizing specific routes to areas or sites under permit or lease.

Recreation

- Do not allow surface or underground disturbance to occur within 100 yards (horizontally or vertically) of known cave resources.
- Where appropriate, do not allow ground disturbing activities within 100 yards of cave entrances, drainage areas, subsurface passages, and developed recreation sites. Do not dispose of waste material or chemicals in sinkholes or gates by cave entrances. If during construction activities any sinkholes or cave openings are discovered, cease construction activities and notify the BLM authorized officer.

Livestock Grazing

- Water troughs
    - Place troughs connected with spring developments outside of riparian and wetland habitats to reduce livestock trampling damage to wet areas.
    - Control trough overflow at springs with float valves or deliver the overflow back into the native channel.
- Based on allotment situations and circumstances associated with livestock grazing and multiple use management, implement any or all of the following appropriate management practices on winterfat dominated ecological sites.
    - Develop grazing systems to control or rest grazing use on winterfat sites after March 1 or when the critical growing season begins. Allow spring grazing use during the critical growing period if a grazing rotation system that provides rest from grazing during the critical growing period at least every other year for all areas is in place. Utilization during the critical growth period should not exceed 35 percent under any circumstances.
    - Place salt and supplements at least 0.5 mile away from winterfat dominated sites. Base placement on site-specific assessment and characteristics such as riparian, topography, cultural, special status species, etc.
    - Locate sheep bedding grounds and camps at least 0.5 mile away from winterfat dominated sites. Base placement on site-specific assessment and characteristics such as riparian, topography, cultural, special status species, etc.
    - Locate water haul sites at least 0.5 mile away from winterfat dominated sites. Base placement on site-specific assessment and characteristics such as riparian, topography, cultural, special status species, etc.
    - Construct livestock reservoirs away from winterfat dominated sites. Base placement on site-specific assessment and characteristics such as riparian, topography, cultural, special status species, etc.
    - If water wells are approved to be drilled in winterfat dominated sites, strive to pipe the water at least 0.5 mile away from winterfat dominated sites. Base placement on site-specific assessment and characteristics such as riparian, topography, cultural, special status species, etc.

Mineral Extraction

- Applications for permit to drill would follow the best management practices as outlined in the BLM oil and gas Gold Book https://www.blm.gov/programs/energy-and-minerals/oil-and-gas/operations-and-production/the-gold-book), as well as on-shore regulations, individual surface use plans, and conditions of approval that may be part of the Record of Decision for EISs or Decision Records for environmental assessments/Findings of No Significant Impacts, Documentation of NEPA Adequacy, and Categorical Exclusions prepared for site-specific projects.
- Do not permit blasting if it would be detrimental to the significant characteristics of archeological or historical values, recreation areas, known caves, water wells, or springs.
- Notify the BLM authorized officer within 5 days of completion of reclamation work so that timely compliance inspections can be completed.

Watershed Management

Manage activities, uses, and authorizations on burned areas to best meet resource management objectives established for the area in specific stabilization, restoration, or activity plans. The BLM authorized officer may open areas to livestock grazing based upon those considerations.

Fire Management

- Notify valid existing land users (such as mine claimants, holders of rights-of-way, and livestock permittees) prior to implementation of prescribed fires that may affect their investments.
- Remove vegetation, where appropriate, to protect facilities (e.g., range improvements, communication sites, and recreation sites).
- Within the area of operation, every effort will be made to prevent, control, or suppress any fire. Fire-fighting equipment may be required to be on site while operations are in progress, depending on hazards inherent in the type of operation and fire hazard levels. Report uncontrolled fires immediately to the BLM Ely Field Office Manager or Authorized Officer. The BLM Fire Dispatch telephone number is (775) 289-1925 or 1-800-633-6092. After working hours, call 911 or the White Pine County Sheriff's Office at (775) 289-8801, the Lincoln County Sheriff's Office at (775) 962-5151, or the Nye County Sheriff's Office at (775) 482-8101.

Noxious and Invasive Weed Management

- Control or restrict the timing of livestock movement to minimize the transport of livestock- borne noxious weed seeds, roots, or rhizomes between weed-infested and weed-free areas.
- When maintaining unpaved roads on BLM-administered lands, avoid the unnecessary disturbance of adjacent native vegetation and the spread of weeds. Grade road shoulders or barrow ditches only when necessary to provide for adequate drainage. Minimize the width of grading operations. The BLM Authorized Officer will meet with equipment operators to ensure that they understand this objective.

Health and Safety

- Consider nozzle type, nozzle size, boom pressure, and adjuvant use and take appropriate measures for each herbicide application project to reduce the chance of chemical drift.
- All applications of approved pesticides will be conducted only by certified pesticide applicators or by personnel under the direct supervision of a certified applicator.
- Prior to commencing any chemical control program, and on a daily basis for the duration of the project, the certified applicator will provide a suitable safety briefing to all personnel working with or in the vicinity of the herbicide application. This briefing will include safe handling, spill prevention, cleanup, and first aid procedures.

- Store all pesticides in areas where access can be controlled to prevent unauthorized/untrained people from gaining access to the chemicals.
- Do not apply pesticides within 440 yards (0.25 mile) of residences without prior notification of the resident.
- Areas treated with pesticides will be adequately posted to notify the public of the activity and of safe reentry dates, if a public notification requirement is specified on the label of the product applied. The public notice signs will be at least 8 1/2" x 11" in size and will contain the date of application and the date of safe re-entry.
- The recreation permittee will post warning signs at all known mine shafts and other hazardous areas that occur within 100 feet of a race course or pit/spectator area and will verbally inform race participants of all hazards at the pre-race meeting.
- The recreation permittee will assume liability for and cleanup of any and all releases of hazardous substances or oil (more than one quart) disposed on public land as defined in the National Oil and Hazardous Substances Contingency Plan (Title 40 Code of Federal Regulations Subpart 300). The permittee will immediately notify the BLM Authorized Officer of any and all releases of hazardous substances or oil (more than one quart) on public land.
- Properly dispose of all tailings, dumps, and deleterious materials or substances. Take measures to isolate, control, and properly dispose of toxic and hazardous materials.
- Remove and properly dispose of all trash, garbage, debris, and foreign matter. Maintain the disposal site and leave it in a clean and safe condition. Do not allow burning at the site.
- Do not drain oil or lubricants onto the ground surface. Immediately clean up any spills under 25 gallons; clean up spills over 25 gallons as soon as possible and report the incident to the BLM Authorized Officer and Nevada Division of Environmental Protection.
- The operator will work with the BLM Authorized Officer on the containment of drilling fluids and drillhole cuttings. Adequately fence, post, or cover mud and separation pits, and hazardous material storage areas.
- Locate powder magazines at least 0.25 mile from traveled roads. Attend loaded shot holes and charges at all times. Use explosives according to applicable federal and state regulations.
- Containerize petroleum products such as gasoline, diesel fuel, helicopter fuel, and lubricants in approved containers. Properly store hazardous materials in separate containers to prevent mixing, drainage, or accidents.

Appendix F-Hydraulic Fracturing Technology Paper

This discussion on hydraulic fracturing is derived from the Hydraulic Fracturing (BLM 2013) written and developed by the Bureau of Land Management, Wyoming State Office. It has been modified to meet the criteria for the State of Nevada.

I. BACKGROUND

Hydraulic fracturing (HF) is a well stimulation process used to efficiently maximize the extraction of underground resources – groundwater, oil, natural gas, and geothermal energy. The HF process includes the acquisition of water, mixing of chemicals, surface pressure pumps, production zone fracturing, and HF flowback disposal.

In the United States, HF has been used since the 1940's. Early on, the HF process utilized pressures that are of a much smaller magnitude than those used today.

The HF process involves the injection of a fracturing fluid and propping agent into the hydrocarbon bearing formation under sufficient pressure to widen existing fractures and/or create new fractures. This allows the trapped hydrocarbons an avenue to flow to the wellbore. HF has gained interest recently as hydrocarbons trapped in low permeability or "tight" sand and shale formations are now technically and economically recoverable. As a result, oil and gas production has increased significantly in the United States.

Prior to the development of HF in hydrocarbon bearing tight gas and shale formations, domestic production of conventional resources had been declining. In response to this decline, the federal government in the 1970's through 1992, passed tax credits to encourage the development of unconventional resources. It was during this time that the HF process was further advanced to include the high-pressure multi-stage HF operations being conducted today.

Generally, HF can be described as follows:

i. Water, proppant, and chemical additives are pumped at extremely high pressures down the wellbore.

ii. The fracturing fluid is pumped through perforated sections of the wellbore and into the surrounding formation, creating fractures in the rock. The proppant holds the fractures open during well production.

iii. Company personnel continuously monitor and gauge pressures, fluids and proppants, studying how the proppants reacts when it hits the bottom of the wellbore, slowly increasing the density of proppants to water as HF progresses.

iv. This process may be repeated multiple times, in "stages" to reach maximum areas of the formation(s). The wellbore is temporarily plugged between each stage to maintain the highest fluid pressure possible for the drill casing and to get maximum fracturing results in the rock.

v. The plugs are drilled or removed from the wellbore and the well is tested for results.

vi. The pressure is reduced and the fracturing fluids are returned up the wellbore for disposal or treatment and re-use, leaving the proppant in place to prop open the fractures and allow the oil/gas to flow.

II. OPERATIONAL ISSUES

Wells that undergo HF may be drilled vertically, horizontally, or directionally and the resultant fractures induced by HF can be vertical, horizontal, or both. Wells in Nevada (NV) may extend to depths greater than 10,000 feet or less than 1,000 feet, and horizontal sections of a well may extend several thousand feet from the production pad on the surface. Prior to initiating HF, a cement bond log and pressure test is required and evaluated to ensure the integrity of the cement and its bond to both the well casing and the rock facies around the annulus within the geologic formation.

The total volume of fracturing fluids is generally 95-99% water. The amount of water needed to fracture a well in NV depends on the geologic basin, the formation, and depth and type of well (vertical, horizontal, directional), and the proposed completion process.

In general, approximately 25,000 to 350,000 gallons may be used to fracture shallow vertical wells in NV, while approximately 800,000 to 10 million gallons may be used to fracture deep horizontal or directionally drilled wells in NV.

Proppant, consisting of synthetic or natural silica sand, may be used in quantities of a few hundred tons for a vertical well to a few thousand tons for a horizontal well.

Drilling muds, drilling fluids, water, proppant, and HF fluids are stored in onsite tanks or lined pits during the drilling and/or completion process. Equipment transport and setup can take several days, and the actual HF and flowback process can occur in a few days up to a few weeks. For oil wells, the flowback fluid from the HF operations is treated in an oil-water separator before it is stored in a lined pit or tank located on the surface. Where gas wells are flowed back using a “green completion process” fluids are run through a multi-phase separator, which are then piped directly to enclosed tanks or to a production unit. Nevada currently does not have any gas production, but this may change, if gas rich formations are discovered.

Gas emissions associated with the HF process, such as methane, carbon dioxide, and volatile organic compounds (VOCs), are captured when the operator utilizes a green completion process. A “green completion process” is where the operator captures gases at the well head immediately after the well is completed. Where a green completion process is not utilized, gas emissions associated with the well may be vented and/or flared until “saleable quality” product is obtained in accordance with federal and state rules and regulations. The total volume of emissions from the equipment used (trucks, engines) will vary based on the pressures needed to fracture the well, and the number of zones to be fractured.

Under either completion process, wastewaters from HF may be disposed in several ways. For example, the flowback fluids may be stored in tanks pending reuse; the resultant waste may be

re-injected using a permitted injection well, or the waste may be hauled to a licensed facility for treatment, disposal and/or reuse.

Disposal of the waste stream following establishment of "sale-quality" product, would be handled in accordance with Onshore Order #7 regulations and other state/federal rules and regulations.

Fracturing Fluids

As indicated above, the fluid used in the HF process is approximately 95 to 99 percent water and proppants, and 1-5 percent of special-purpose chemical additives. There is a broad array of chemicals that can be used as additives in a fracture treatment including, but not limited to, hydrochloric acid, anti-bacterial agents, corrosion inhibitors, gelling agents (polymers), surfactants, and scale inhibitors. The 1 to 5 percent of chemical additives translates to a minimum of 15,000 gallons of chemicals for every 1.5 million gallons of water used to fracture a well (Paschke, Dr. Suzanne. USGS, Denver, Colorado. September 2011). Water used in the HF process is generally acquired from surface water or groundwater in the local area. Information on obtaining water and water rights is discussed below.

The Nevada Division of Minerals (NDOM) has regulations that require the reporting of the amount and type of chemicals used in a HF operation in "FracFocus" within 60 days of HF completion for public disclosure. For more information concerning FracFocus and HF, refer to the FracFocus website at www.fracfocus.org and the NDOM website at minerals.state.nv.us.

Re-Fracturing

Re-fracturing of wells (RHF) may be performed after a period of time to restore declining production rates. RHF success can be attributed to enlarging and reorienting existing fractures while restoring conductivity due to proppant degradation and fines plugging. Prior to RHF, the wellbore may be cleaned out. Cleaning out the wellbore may recover over 50% of the initial proppant sand. Once cleaned, the process of RHF is the same as the initial HF. The need for RHF cannot be predicted.

Water Availability and Consumption Estimates

According to the Nevada State Water Plan (March 1999), total statewide water withdrawals for NV are forecasted to increase about 9 percent from 4,041,000 acre-feet (af) in 1995 to 4,391,000 acre-feet in 2020, assuming current levels of conservation. Approximately one-half of these withdrawals are consumptively used. This projected increase in water use is directly attributable to Nevada's increasing population and related increases in economic endeavors.

The anticipated rise in total statewide water withdrawals primarily reflects expected increases in public supply for municipal and industrial (M&I) water usage to meet the needs of a growing urban population, with expanding commercial and industrial activities. Nevada's population is projected to reach about 3,047,000 by the year 2020, with about 95 percent of these residents served by public water systems (NDWP, March 1999).

M&I withdrawals currently account for about 13 percent of the water used in NV. About 77 percent of water withdrawals are currently for agricultural use. Annual M&I water use is projected to increase from 525,000 af in 1995 to 1,034,000 af in 2020 (24 percent of total water withdrawals) based upon existing water use patterns and conservation measures. Approximately 6 to 7 percent of statewide water withdrawals occur in the mining industry (NDWP, March 1999).

Interest in obtaining the necessary water supplies for wildlife and environmental needs is increasing. Additionally, the popularity of water-based outdoor recreation continues to grow. It is anticipated that these trends will continue, resulting in increased water supply demands for wildlife, environmental and recreational purposes.

Currently, surface water supplies are virtually fully appropriated. The increase in total statewide demand, particularly M&I water use, is expected to be met via better demand management (conservation), use of alternative sources (reused water, reclaimed water and gray water), purchases, leases or other transfers from existing water users, and by new groundwater appropriations. Much of the state's unappropriated groundwater is located in basins at a distance from urban centers. Thus, increasing attention will be placed on interbasin and intercounty transfers, and implementation of underutilized water management tools such as water marketing and water banking. Water for instream flow purposes, wildlife protection, environmental purposes and recreation will likely be generated by increased conservation and the acquisition of existing water rights (NDWP, March 1999).

Comparison Figures:

- Olympic-sized swimming pool - **660,430 gallons** of water.
- Typical golf course requires **100,000 to 1,000,000 gallons** of water per week in summer to maintain healthy vegetation.
- Average car wash of fresh water uses **9 to 15 gallons** during any given wash cycle.
- Average household in Southern Nevada uses about **222 gallons** of water per day (**81,000 gallons** per year).

Potential Sources of Water for Hydraulic Fracturing

Quality freshwater is required to drill the surface-casing section of the wellbore per Federal regulations; other sections of the wellbore (intermediate and/or production strings) would be drilled with appropriate quality makeup water as necessary. This is done to protect usable water zones from contamination, to prevent mixing of zones containing different water quality/use classifications, and to minimize total freshwater volumes. With detailed geologic well logging during drilling operations, geologists/mud loggers on location identify the bottoms of these usable water zones, which aids in the proper setting of casing depths. Usable water is defined as having less than 10,000 mg/l of Total Dissolved Solids (TDS). Drinking or potable water is defined as having less than 1,000 mg/l of TDS.

Several sources of water are available for drilling and/or HF in NV. Nevada's water rights system is based on the prior appropriation doctrine; therefore, all use of water, with the exception of domestic wells, requires a permit from the State Engineer (NRS 534.180). Like any other water

user, companies that drill or hydraulically fracture oil and gas wells must adhere to NV water laws when obtaining and using specific sources of water.

Below is a discussion of the sources of water that could potentially be used for HF. The decision to use any specific source is dependent on BLM authorization at the APD stage and the ability to obtain water rights. From an operators' standpoint, the decision regarding which water source will be used is primarily driven by the economics associated with procuring a specific water source.

Water transported from outside the state. The operator may transport water from outside the state. As long as the transport and use of the water carries no legal obligation to NV, this is an allowable source of water from a water rights perspective.

Irrigation water leased or purchased from a landowner. The landowner may have rights to surface water, delivered by a ditch or canal that is used to irrigate land. The operator may choose to enter into an agreement with the landowner to purchase or lease a portion of that water. This is allowable, however, in nearly every case, the use of an irrigation water right is likely limited to irrigation uses and cannot be used for well drilling and HF operations. To allow its use for drilling and HF, the owner of the water right and the operator must apply to change the water right through a formal process.

Treated water or raw water leased or purchased from a water provider or municipality. The operator may choose to enter into an agreement with a water provider to purchase or lease water from the water provider's system. Municipalities and other water providers may have a surplus of water in their system before it is treated (raw water) or after treatment that can be used for drilling and HF operations. Such an arrangement would be allowed only if the operator's use were compliant with the water provider's water rights.

Water treated at a waste water treatment plant leased or purchased from a water provider. The operator may choose to enter into an agreement with a water provider to purchase or lease water that has been used by the public and then treated as wastewater. Municipalities and other water providers discharge their treated waste water into the streams where it becomes part of the public resource, ready to be appropriated once again in the priority system. But for many municipalities a portion of the water that is discharged has the character of being "reusable." As a result, it is possible that after having been discharged to the stream, it could be diverted by the operator to be used for drilling and HF operations. Such an arrangement would only be appropriate with the approval of the Nevada Division of Water Resources, State Engineer's Office (NDWR) and would be allowed only if the water provider's water rights include uses for drilling and HF operations.

New diversion of surface water flowing in streams and rivers. New diversion of surface waters in most parts of the state are rare because the surface streams are already fully appropriated, meaning that there is no water available for appropriation. Given the variability of surface water flows in the State, this may not be the most reliable water source even if there is water available for appropriation.

Produced Water. The operator may choose to use water produced in conjunction with oil or gas production at an existing oil or gas well. The water that is produced from an oil or gas well is under the administrative purview of the NDEP, Underground Injection Control Program (UIC) and is either non-tributary, in which case, it is administered independent of the prior appropriation doctrine; or is tributary, in which case, the depletions from its withdrawal must be fully augmented if the depletions occur in an over-appropriated basin. The result in either case is that the produced water is available for consumption for other purposes, not just oil and gas operations. The water must not be encumbered by other needs and the operator must obtain a proper well permit from the NDWR before the water can be used for drilling and HF operations.

Reused or Recycled Drilling Water. Water that is used for drilling of one well may be recovered and reused in the construction of subsequent wells. The BLM encourages reuse and recycling of both the water used in well drilling and the water produced in conjunction with oil or gas production. However, as described above, the operator must obtain the right to use the water for this purpose.

On-Location Water Supply Wells. Operators may apply for, and receive, permission from the NDWR to drill and use a new water supply well. These wells are usually drilled on location to provide an on-demand supply. The proper construction, operation and maintenance, backflow prevention and security of these water supply wells are critical considerations at the time they are proposed to minimize impacts to the well and/or the waters in the well, water right holders and water-dependent resources. Plugging these wells is under the jurisdiction of the NDWR and BLM.

Authorization of any future proposed projects would require full compliance with local, state, and federal regulations and laws that relate to surface and groundwater protection and would be subject to routine inspections by the BLM and the State of Nevada Commission on Mineral Resources, Division of Minerals Memorandum of Understanding dated January 9, 2006, prior to approval.

III. Potential Impacts to Usable Water Zones

Impacts to freshwater supplies can originate from point sources, such as chemical spills, chemical storage tanks (aboveground and underground), industrial sites, landfills, household septic tanks, and mining activities. Impacts to usable waters may also occur through a variety of oil and gas operational sources which may include, but are not limited to, pipeline and well casing failure, and well (gas, oil and/or water) drilling and construction of related facilities. Similarly, improper construction and management of open fluids pits and production facilities could degrade ground water quality through leakage and leaching.

Should hydrocarbons or associated chemicals for oil and gas development, including HF, exceeding US Environmental Protection Agency (EPA)/NDEP standards for minimum concentration levels migrate into potable water supply wells, springs, or usable water systems, it could result in these water sources becoming non-potable and killing off aquatic species. Water wells developed for oil and gas drilling could also result in a drawdown in the quantity of water in nearby residential areas depending upon the geology and volumes of water extracted.

Usable groundwater aquifers are most susceptible to pollution where the aquifer is shallow (within 100 feet of the surface depending on surface geology) or perched, are very permeable, or connected directly to a surface water system, such as through floodplains and/or alluvial valleys or where operations occur in geologic zones which are highly fractured and/or lack a sealing formation between the production zone and the usable water zones. If an impact to usable waters were to occur, a greater number of people could be affected in densely populated areas versus sparsely populated areas characteristic of NV. Pollution could also impact usable waters in remote basins where interbasin transfer projects can pump and transport water through pipelines to urban areas, like Las Vegas and Reno. The BLM is also required to analyze potential impacts to aquatic species from groundwater contamination.

Potential impacts on usable groundwater resources from fluid mineral extraction activities could result from the following scenarios:

i. Contamination of aquifers through the introduction of drilling and/or completion fluids through spills or drilling problems, such as lost circulation zones.

ii. Communication of the induced hydraulic fractures with existing fractures potentially allows for HF fluid migration into usable water zones/supplies. The potential for this impact is likely dependent on the local hydraulic gradients where those fluids are dissolved in the water column.

iii. Cross-contamination of aquifers/formations may result when fluids from a deeper aquifer/formation migrate into a shallower aquifer/formation due to improperly cemented well casings.

iv. Localized depletion of perched aquifer or drawdown of unconfined groundwater aquifer.
Progressive contamination of deep confined, shallow confined, and unconfined aquifers if the deep confined aquifers are not completely cased off, and geologically isolated, from deeper oil bearing units. An example of this would be salt water intrusion resulting from sustained drawdown associated with the pumping of groundwater.

v. Casing failure (casing ruptures in low pressure formations, casing corrosion)

vi. Communication through old abandoned wells nearby

vii. Transportation of fluids to and from site (accidents)

viii. Wastewater disposal

The impacts above could occur as a result of the following processes:

<u>Improper casing and cementing.</u>

A well casing design that is not set at the proper depths or a cementing program that does not properly isolate necessary formations could allow oil, gas or HF fluids to contaminate other teaquifers/formations. In addition, old well casing and casing cement that has corroded over time can fail allowing contaminates to migrate into the well formation.

Natural fractures, faults, and abandoned wells.
If HF of oil and gas wells result in new fractures connecting with established natural fractures, faults, or improperly plugged dry or abandoned wells, a pathway for gas or contaminants to migrate underground may be created posing a risk to water quality. The potential for this impact is currently unknown but it is generally accepted that the potential decreases with increasing distance between the production zone and usable water zones. This potential again is dependent upon the site specific conditions at the well location.

Fracture growth.
A number of studies and publications report that the risk of induced fractures extending out of the target formation into an aquifer allowing hydrocarbons or other fluids to contaminate the aquifer may depend, in part, on the formation thickness separating the targeted fractured formation and the aquifer. According to a 2012 Bipartisan Policy Center report, the fracturing process itself is unlikely to directly affect freshwater aquifers because in Nevada fracturing typically takes place at a depth of 6,000 to 10,000 feet, while drinking water aquifers are typically less than 1,000 feet deep. However, some areas of Nevada, the deep carbonate aquifer can extend to 6,000 feet below ground surface. Recent studies have shown that induced fractures created during HF growing more than 350 meters vertically is less than 1% (Lacazette and Geiser). If a parcel is sold and development is proposed in usable water zones, those operations would have to comply with federal and/or state water quality standards or receive a Class II designation from the NDEP.

Fracture growth and the potential for upward fluid migration, through volcanic, sedimentary and other geologic formations depend on site-specific factors such as the following:

i. Physical properties, types, thicknesses, and depths of the targeted formation as well as those of the overlying geologic formations.

ii. Presence of existing natural fracture systems and their orientation in the target formation and surrounding formations.

3. Amount and distribution of stress (i.e., in-situ stress), and the stress contrasts between the targeted formation and the surrounding formations.

Hydraulic fracture stimulation designs include the volume of fracturing fluid injected into the formation as well as the fluid injection rate and fluid viscosity; this information is evaluated against the above site specific considerations**.**

Fluid leak and recovery (flowback) of HF fluids.

Not all fracturing fluids injected into the formation during the HF process are recovered at the surface. Estimates of the fluids recovered range from 15-80% of the volume injected depending on the site (EPA 2010). Fluid movement into smaller fractures or other geologic substructures can be to a point where flowback efforts will not recover all the fluid or that the pressure reduction caused by pumping during subsequent production operations may not be sufficient to recover all the fluid that has leaked into the formation. Fracturing fluids can remain in the formation due to adsorption and chemical reactions, movement out of the capture zone, inadequate mixing, or from fracture collapse. It is noted that the fluid loss due to leakage into small fractures and pores is minimized by the use of cross-linked gels.

Willberg et al. (1998) analyzed HF flowback and described the effect of pumping rates on cleanup efficiency in initially dry, very low permeability (0.001 millidarcy) shale. Some wells in this study were pumped at low flowback rates (less than 3 barrels per minute (bbl/min). Other wells were pumped more aggressively at greater than 3 bbl/min. Thirty-one percent of the injected HF fluids were recovered when low flowback rates were applied over a 5-day period. Forty-six percent of the fluids were recovered when aggressive flowback rates were applied in other wells over a 2-day period. In both cases, additional fluid recovery (10 percent to 13 percent) was achieved during the subsequent gas production phase, resulting in a total recovery rate of 41 percent to 59 percent of the initial volume of injected HF fluid. Ultimate recovery rate however, is dependent on the permeability of the rocks, fracture configuration, and the surface area of the fracture(s).

The ability of HF chemicals to migrate in an undissolved or dissolved phase into a usable water zone is likely dependent upon the location of the sealing formation (if any), the geology of the sealing formation, hydraulic gradients and production pressures.

HF fluids can remain in the subsurface unrecovered, due to “leak off” into connected fractures and the pores of rocks. Fracturing fluids injected into the primary hydraulically induced fracture can intersect and flow (leak off) into preexisting smaller natural fractures. Some of the fluids lost in this way may occur very close to the well bore after traveling minimal distances in the hydraulically induced fracture before being diverted into other fractures and pores. Once “mixed” with the native water, local and regional vertical and horizontal gradients may influence where and if these fluids will come in contact with usable water zones, assuming that there is inadequate recovery either through the initial flowback or over the productive life of the well. Faults, folds, joints, etc., could also alter localized flow patterns as discussed below.

The following processes can influence effective recovery of the fracture fluids:

Check-Valve Effect

A check-valve effect occurs when natural and/or newly created fractures open and HF fluid is forced into the fractures when fracturing pressures are high, but the fluids are subsequently prevented from flowing back toward the wellbore as the fractures close when the fracturing pressure is decreased (Warpinski et al., 1988; Palmer et al., 1991a).

A long fracture can be pinched-off at some distance from the wellbore. This reduces the effective fracture length. HF fluids trapped beyond the "pinch point" are unlikely to be recovered during flowback and oil/gas is unlikely to be recovered during production.

In most cases, when the fracturing pressure is reduced, the fracture closes in response to natural subsurface compressive stresses. Because the primary purpose of HF is to increase the effective permeability of the target formation and connect new or widened fractures to the wellbore, a closed fracture is of little use. Therefore, a component of HF is to "prop" the fracture open, so that the enhanced permeability from the pressure-induced fracturing persists even after fracturing pressure is terminated. To this end, operators use a system of fluids and "proppants" to create and preserve a high-permeability fracture-channel from the wellbore deep into the formation.

The check-valve effect takes place in locations beyond the zone where proppants have been placed (or in smaller secondary fractures that have not received any proppant). It is possible that some volume of stimulation fluid cannot be recovered due to its movement into zones that were not completely "propped" open.

Adsorption and Chemical Reactions

Adsorption and chemical reactions can also prevent HF fluids from being recovered. Adsorption is the process by which fluid constituents adhere to a solid surface and are thereby unavailable to flow with groundwater. Adsorption to coal is likely; however, adsorption to other geologic material (e.g., shale, sandstone) is likely to be minimal. Another possible reaction affecting the recovery of fracturing fluid constituents is the neutralization of acids (in the fracturing fluids) by carbonates in the subsurface.

Movement of Fluids outside the Capture Zone

Fracturing fluids injected into the target zone flow into fractures under very high pressure. The hydraulic gradients driving fluid flow away from the wellbore during injection are much greater than the hydraulic gradients pulling fluid flow back toward the wellbore during flowback and production (pumping) of the well. Some portion of the fracturing fluids could be forced along the hydraulically induced fracture to a point beyond the capture zone of the production well. The size of the capture zone will be affected by the regional groundwater gradients, and by the drawdown caused by producing the well. Site-specific geologic and hydrogeologic characteristics, injection pressure, and production pumping details should provide the information needed to estimate the dimension of the production well capture zone and the extent to which the fracturing fluids might disperse and dilute.

Incomplete Mixing of Fracturing Fluids with Water

Steidl (1993) documented the occurrence of a gelling agent that did not dissolve completely and actually formed clumps at 15 times the injected concentration in an induced fracture. Steidl also directly observed gel hanging in stringy clumps in many other induced fractures. As Willberg et al. (1997) noted, laboratory studies indicate that fingered flow of water past residual gel may impede fluid recovery. Therefore, some fracturing fluid gels appear not to flow with groundwater during production pumping and remain in the subsurface unrecovered. Such gels are unlikely to flow with groundwater during production, but may present a source of gel constituents to flowing groundwater during and after production.

IV. Geologic Hazards (including seismic/landslides)

Nevada is the 3rd most tectonically active state in the union. Since the 1850s there have been 63 earthquakes with a magnitude greater than 5.5, the cutoff for a destructive earthquake. Potential geologic hazards caused by HF include induced seismic activity in addition to the tectonic activity already occurring in the state. Induced seismic activity could indirectly cause a surficial landslide where soils/slopes are susceptible to failure. Landslides involve the mass movement of earth materials down slopes and can include debris flows, soil creep, and slumping of large blocks of material. Any destructive earthquake also has the potential to induce liquefaction in saturated soils.

Earthquakes occur when energy is released due to blocks of the earth's crust moving along areas of weakness or faults. Earthquakes attributable to human activities are called "induced seismic events" or "induced earthquakes." In the past several years induced seismic events related to energy development projects have drawn heightened public attention. Although only a very small fraction of injection and extraction activities at hundreds of thousands of energy development sites in the United States have induced seismicity at levels that are noticeable to the public, seismic events caused by or likely related to energy development have been measured and felt in Alabama, Arkansas, California, Colorado, Illinois, Louisiana, Mississippi, Nebraska, Nevada, New Mexico, Ohio, Oklahoma, and Texas.

A study conducted by the National Academy of Sciences (Induced Seismicity Potential in Energy Technologies, National Academy of Sciences, 2012) studied the issue of induced seismic activity from energy development. As a result of the study, they found that:

- The process of hydraulic fracturing a well as presently implemented for shale gas recovery does not pose a high risk for inducing felt seismic events; and
- Injection for disposal of waste water derived from energy technologies into the subsurface does pose some risk for induced seismicity, but very few events have been documented over the past several decades relative to the large number of disposal wells in operation.

However, a more recent study by the U.S. Geological Service has found that at some locations the increase in seismicity coincides with the injection of wastewater in deep disposal wells. Wastewater injection increases the underground pore pressure, which may, in effect, lubricate nearby faults thereby weakening them. If the pore pressure increases enough, the weakened fault will slip, releasing stored tectonic stress in the form of an earthquake. Even faults that have not moved in millions of years can be made to slip and cause an earthquake if conditions underground are appropriate (USGS 2014).

The potential for induced seismicity cannot be made at the leasing stage; as such, it will be evaluated at the APD stage should the parcel be sold/issued, and a development proposal submitted.

V. Spill Response and Reporting

Spill Prevention, Control, and Countermeasure (SPCC) Plans – EPA's rules include requirements for oil spill prevention, preparedness, and response to prevent oil discharges to navigable waters and adjoining shorelines. The rule requires that operators of specific facilities prepare, amend, and implement SPCC Plans. The SPCC rule is part of the Oil Pollution Prevention regulation, which also includes the Facility Response Plan (FRP) rule. Originally published in 1973 under the authority of §311 of the Clean Water Act, the Oil Pollution Prevention regulation sets forth requirements for prevention of, preparedness for, and response to oil discharges at specific non-transportation-related facilities. To prevent oil from reaching navigable waters and adjoining shorelines, and to contain discharges of oil, the regulation requires the operator of these facilities to develop and implement SPCC Plans and establishes procedures, methods, and equipment requirements (Subparts A, B, and C). In 1990, the Oil Pollution Act amended the Clean Water Act to require some oil storage facilities to prepare FRPs. On July 1, 1994, EPA finalized the revisions that direct facility owners or operators to prepare and submit plans for responding to a worst-case discharge of oil.

In addition to EPA's requirements, operators must provide a plan for managing waste materials, and for the safe containment of hazardous materials, per Onshore Order #1 with their APD proposal. All spills and/or undesirable events are managed in accordance with Notice to Lessee (NTL) 3-A for responding to all spills and/or undesirable events related to HF operations.

Certain oil and gas exploration and production wastes occurring at or near wellheads are exempt from the Clean Water Act, such as: drilling fluids, produced water, drill cuttings, well completion, and treatment and stimulations fluids. In general, the exempt status of exploration and production waste depends on how the material was used or generated as waste, not necessarily whether the material is hazardous or toxic.

VI. Public Health and Safety

The intensity, and likelihood, of potential impacts to public health and safety, and to the quality of usable water aquifers is directly related to proximity of the proposed action to domestic and/or community water supplies (wells, reservoirs, lakes, rivers, etc.) and/or agricultural developments. The potential impacts are also dependent on the extent of the production well's capture zone and well integrity. Nevada's Standard Lease Stipulations and Lease Notices specify that oil and gas development is generally restricted within 500 feet of riparian habitats and wetlands, perennial water sources (rivers, springs, water wells, etc.) and/or floodplains. Intensity of impact is likely dependent on the density of development.

VII. Hydraulic Frac Job Data for Nevada.

Operator	Noble Energy	Noble Energy	Noble Energy	Makoil	Grant Canyon
Well	Humboldt M2C-M2-21	Huntington K1L-1V	Humboldt M10C-M10-11	Portugese Mountain 14A	Blackburn #16
Total Base Water Volume (gal)	250,057	300,537	343,919	29,949	209,600
2% KCL Water	88.5614	0	86.45119	0	0
Fresh Water	0	88.9968	0	53.90215	85.2039
Water	1.57645	0.61826	0.81892	0.78169	0.53354
2-bromo-2-nitro-1, 3-propanediol	0.00202	0.00213	0.00358	0.00129	0.00171
Crystalline Silica, quartz	0.65036	8.59936	10.49356	32.39228	14.4277
Ethylene glycol monobutyl ether	0.02379	0.00537	0.01688	0.09718	0.02695
Isopropanol	0.00311	0.00351	0.00221	0.04926	0.00353
Methanol	0.00311	0.00353	0.00226	0.05782	0.00361

* Values are based on the percent of the total mass. These are the most common additives in all the jobs.

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Appendix I-Socioeconomic Analysis Baseline

Socioeconomic Analysis Baseline

Ely DO July 2023 Oil and Gas Lease Sale
DOI-BLM-NV-L000-2023-0002-EA

February 15, 2023

Matt Fockler, PhD
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Bureau of Land Management

Socioeconomic Methodology

1. Scale for analysis: The data reported includes statistics from Nye, White Pine, and Lincoln counties, NV. Reference community for this analysis was identified as the State of Nevada non-metro counties. These data layers were selected because they are proximal to the project area and contain populations that the project may directly and/or indirectly impact. The project area is located in Nye County, NV.
2. Data Sources: County-level and state reference data were obtained from the U.S. Department of Labor, the Bureau of Labor Statistics, the U.S. Department of Commerce, local area unemployment statistics, and the U.S. Census Bureau, as compiled by Headwaters Economics for the BLM.

Socioeconomic Data and Analysis

Introduction

The project area is located or adjacent to Nye, White Pine, and Lincoln counties, NV (Figure 1). It includes lands managed by the Bureau of Land Management, the United States Forest Service, the Department of Defense, and tribal communities. Major urban areas in the counties include Ely (White Pine Co.), Tonopah (Nye Co.), and Caliente (Lincoln Co.). Tonopah, NV is located approximately 150 miles from the project area and is excluded from this analysis. The project area is in the White River Valley (Nye Co. but near Lincoln Co.) and Railroad Valley (Nye Co. and near the Duckwater Reservation). State Hwy 6 and SR-318 are the closest major roadways that intersect the project.

Land Ownership Data

There are 24,148,146 total acres within the study area (Table 1). Of those, 23,350,531 acres (96.7 percent) are federally owned lands. Nye County, NV has the largest total federal land (11,322,575 acres / 97.2 percent) in the study area followed by Lincoln County, NV (6,658,164 acres / 97.8 percent). The Bureau of Land Management (BLM) manages 16,655,582 acres (69.0 percent) of the study area's total land with Lincoln County, NV (82.0 percent) and White Pine County, NV (79.3 percent) containing the largest BLM landholdings. There are 693,377 acres (2.9 percent) of the study area under private ownership. Tribal lands include 78,967 acres (0.3 percent) of the total study area.[1]

Figure 1: Ely DO July 2023 Oil and Gas Lease Sale Socioeconomic Study Area

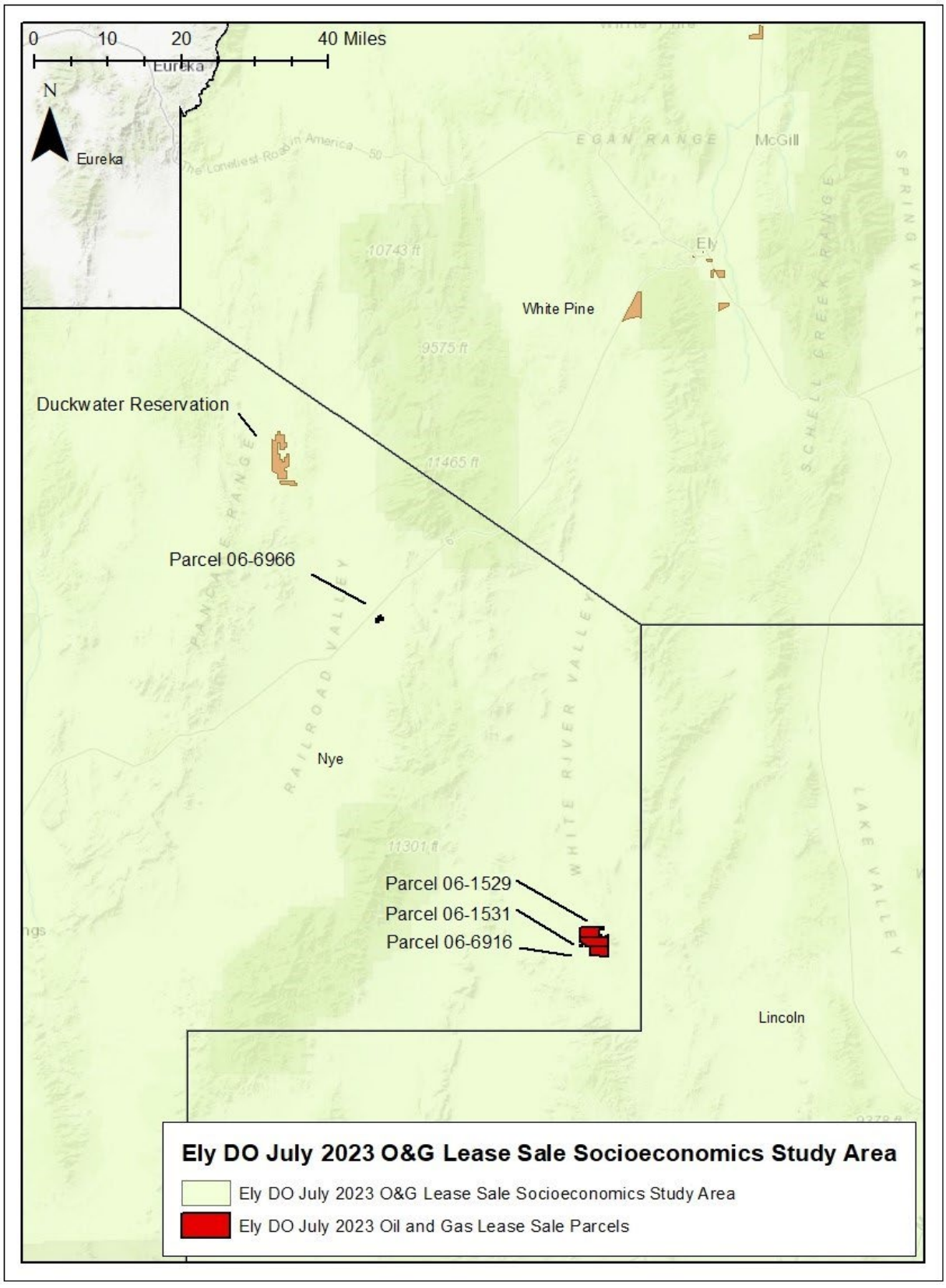

Table 1: Land Ownership in Ely 2023 O&G Lease Sale Socioeconomic Study Area in Acres (and % of Total)

	White Pine County, NV	Lincoln County, NV	Nye County, NV
Total Land	5,693,255	6,807,789	11,647,102
Federal Land	5,369,792 (94.3%)	6,658,164 (97.8%)	11,322,575 (97.2%)
BLM	4,515,194 (79.3%)	5,581,253 (82.0%)	6,559,135 (56.3%)
Tribal Land	70,488 (1.2%)	0 (0.0%)	8,479 (0.1%)

In FY 2019 the federal government paid state and local governments associated with the study area a total of $8,848,456 (in FY 2021 dollars). Of those payments, $5,835,135 (65.9 percent) were Payments in Lieu of Taxes (PILT) and $536,118 (6.1 percent) were from the BLM.

Population Demographics Data

In 2021 the total population of the study area was 67,157. Study area population increased by 21,035 people since 2000 (Table 2). This represents an increase of 45.6 percent over that period. Most of that growth occurred in Nye County, NV and likely occurred away from the project areas.[2]

Table 2: Population in Ely 23 O&G Lease Sale Socioeconomic Study Area (percent change from 2000-21)

	White Pine County, NV	Lincoln County, NV	Nye County, NV
Pop. 2000	9,029	4,179	32,914
Pop. 2021	9,182	4,525	53,450
Percent Change	+ 1.7%	+ 8.3%	+ 62.4%
2021 % of Total SA Pop.	13.7%	6.7%	79.6%

In 2021, 27.3 percent of study area residents were 65 years or older. This represents a 7.0 percent increase from 2010. Nearly 56 percent of the entire study area is 45 and 0ver. Substantial growth in these sectors can alter regional spending patterns, consumer demands (for health care and housing), and affect how communities develop economically. Moreover, the study area displays a significant decline in the Under 18 sector and a moderate decline in the 35-44 sector. Declines in these sectors could represent dissatisfaction with social and economic conditions (Table 3).[3]

Table 3: Ely 2023 O&G Lease Sale Socioeconomic Study Area Age Profile (and percent change 2010-21)

	Study Area 2010	Study Area 2021	Percent Change
Totals	58,703	63,888	--------
Under 18	13,494 (23.0%)	11,054 (17.3%)	- 5.7 %
18-34	8,565 (14.6%)	10,501 (16.4%)	+ 1.8 %
35-44	6,951 (11.8%)	6,713 (10.5%)	- 1.3 %
45-64	17,799 (30.3%)	18,158 (28.4%)	- 1.9 %
65 and over	11,894 (20.3%)	17,462 (27.3%)	+ 7.0 %

In 2021, 17,272 people (27.0 percent) in the study area self-identified as a member of a racial and/or ethnic minority group. This is compared to a total minority percentage of 28.8 in the reference area. In that same year, 57 percent of the minority population identified as Latinx (Table 4).[4]

Table 4: Ely 2023 O&G Lease Sale Ethnic and Racial Profile (and percent of county population)

	White Pine County, NV	Lincoln County, NV	Nye County, NV
Total Pop. 2021	9,192	4,600	50,096
Minority Pop. 2021	2,669 (29.0%)	717 (15.6%)	13,886 (27.7)
White Alone	6,523 (71.0%)	3,883 (84.4%)	6,523 (71.0%)
Hispanic or Latinx (any race)	1,562 (17.0%)	364 (7.9%)	7,888 (15.7%)
Black or African American Alone	648 (7.0%)	196 (4.3%)	944 (1.9%)
American Indian Alone	315 (3.4%)	83 (1.8%)	613 (1.2%)
Asian or Pacific Isl. Alone	49 (0.5%)	3 (0.1%)	507 (2.2%)
Other Race	0 (0.0%)	0 (0.0%)	5 (0.0%)
Two or More Races	95 (1.0%)	71 (1.5%)	3,329 (6.6%)

Jobs and Wages by Industry, Employment, and Poverty Data

The total number of full- and part-time study area jobs (as defined by the U.S. Department of Commerce) in 2021 was 25,808 (Table 5). This represents an increase of 7,016 employed persons (37.3 percent) from 2001 to 2021.[5]

It is estimated that in 2021, 4,930 study area jobs (19.1 percent) were in non-services related sectors compared to 19.8 percent in the reference area. White Pine County is the largest contributor to this statistic (33.4 percent). Within the non-service sector mining - mostly in Nye and White Pine counties (2,697 jobs, 10.5 percent of total jobs) and construction (1,231 jobs, 4.8 percent of total jobs) were the largest employers. There were an estimated 16,631 jobs (64.4 percent) in service-related employment sectors compared to 55.7 percent in the reference area. Within the service sector, retail trade (3,194 jobs, 12.4 percent of total jobs) was the largest employer.[6]

Table 5: Ely 23 O&G Lease Sale Jobs by Industry (percent of total jobs)

	White Pine County, NV	Lincoln County, NV	Nye County, NV
Total Jobs 2021	5,513 (21.4%)	2,406 (9.3%)	17,889 (69.3%)
Total Jobs 2001	3,980 (21.2%)	1,820 (9.7%)	12,992 (69.1%)
Total Jobs Change	+ 1,533	+ 586	+ 4,897
Share, SA Total Job Change	+0.2%	-0.4%	+0.2%
Total Non-Service Jobs 2021	1,842 (7.1%)	334 (1.3%)	2,754 (10.7%)
Total Non-Service Jobs 2001	641 (3.4%)	256 (1.4%)	2,675 (14.2%)
Total Non-Service Change	+ 1,201	+ 78	+ 79
Share, SA Non-Ser. Job Change	+ 3.7%	- 0.1%	- 3.5%
Total Service Jobs 2021	2,391	1,215	13,025
Total Service Jobs 2001	27,040 (18.4%)	9,050 (6.0%)	35,568 (23.7%)

Total Service Change	+7,254	+2,816	+25,970
Share, SA Service Job Change	-2.3%	-0.4%	+5.1%

Oil and gas extraction, including drilling and support for oil and gas operations in the study area are nearly non-existent. In 2021, Nye County, NV was the only county in the study area to report jobs (4 total jobs) in the oil and gas industry. In 2021, only 15 total jobs were reported in the NV non-metro reference area.[7]

Within the study area, labor earnings increased by 5.8 percent from 2010 to 2021. The average annual wage for all reported jobs was $56,995 in 2021 dollars compared to $60,314 for all reported jobs in the reference area.[8]

Summary and Analysis

Land Ownership and Management:

The study area is comprised of three counties in central and eastern NV. Over 96 percent of the study area is owned and managed by federal agencies – a considerable number. As such, BLM and federal management decision may have a relatively larger effect on socioeconomic conditions, recreation activity, local community quality of life and sense of place, and resource use. Local governments may also rely heavily on federal land payments, taxes, and direct and indirect revenues generated from activities on public lands.

Population and Demographics:

The project area intersects several communities in rural NV. Long-term, steady population growth is generally an indication of a healthy economy and a positive community sense-of-place. Population growth is not evenly distributed across the study area; it is likely that most of the region's population growth occurs west of the study area. The region is home to many communities that prize outdoor recreation and open space. The aging population is a concern.

Jobs, Wages, Employment, and Poverty:

The study area exhibits some economic growth since the Great Recession, though wages are generally lower than the State of NV and other Great Basin states. Community employment profiles support more or less boom and bust economies. While mining and other extractive industries are important employers, especially in Nye and White Pine counties, oil and gas is an insignificant contributor to the economic sector.

Specialist Recommendation

Based upon the above analysis, the likelihood that these four lease parcels will contribute significantly to the socioeconomic landscape in the study area is small. While past performance cannot predict future results, there is little support for oil and gas extraction in NV. Should these leases move toward exploration and development, further analysis will be warranted. As it is, the sale of these leases offers little socioeconomic impact on the study area. The resource is present but not affected.

Appendix J -Analysis Tiered to and Incorporated by Reference

The following resources were determined to be present and maybe affected by the proposed action, but the analysis presented in the 2007 Ely Proposed RMP/FEIS (See Chapter 7 for reference) adequately discussed potential impacts relative to the July 2023 Oil and Gas Lease Sale because the Proposed Action is based on the RFFD. While the action of leasing does not authorize direct impacts to the following resources, there could be indirect and cumulative impacts associated with the Proposed Action. The tiered and incorporated analysis presented in this appendix serves as the discussion for assessing impacts to the following resources: Soil Resources, Vegetation, Forest/Woodland and other Plant Products, Noxious and Invasive Weed Management, Wild Horses, and Recreation.

The analysis for the No Action Alternative is common to all the following resources and is as follows: The No Action Alternative would have no additional impacts in the analysis area outside of those occurring under current management. Activities on currently leased parcels adjacent to the proposed parcels would remain on going as permitted on surrounding federal, state, and private lands.

Soil Resources

Affected Environment

The Ely Proposed RMP/FEIS describes the existing conditions, trends, and current management of soil resources within the Ely District Planning Area (pages 3.4-1 – 3.4-3). This EA tiers to and incorporates by reference the affected environment section for soil resources in the Ely Proposed RMP/FEIS. The analysis identifies four major settings of soils found in the Ely District, including basin floors, alluvial fans and stream terraces, fan piedmonts, and hills and mountains. The FEIS also includes a discussion of biological soil crusts found in the Great Basin and parts of the Mojave Desert. Section 3.4.2 of the FEIS discloses that soil resources in the Planning Area appear to be on a trend of increasing risk due to factors such as sparse to absent herbaceous vegetation, catastrophic fire, trampling by livestock, wild horses, or wildlife, and increasing recreational use and severe wildland fires affecting biological crusts. The Ely District estimates erosion rates prior to substantial ground disturbing activities in the Planning Area, and typically applies BMPs to minimize soil and erosion and sediment yield on the site-specific local level (Ely Proposed RMP/FEIS, Section 3.4.3, page 3.4-3).

Environmental Effects

The Ely Proposed RMP/FEIS describes the environmental consequences of geology and mineral extraction on soil resources within the Ely District Planning Area (pages 4.4-4 – 4.4-5). This EA tiers to and incorporates by reference the environmental consequences section discussing effects of geology and mineral extraction on soil resources in the Ely Proposed RMP/FEIS. The analysis identifies 17,100 acres of potential disturbance to soils from mineral extraction based on the RFFD. It also discloses that mineral extraction projects have the potential to result in soil compaction, erosion, excavation, and losses of soil quality in the project area. Additionally, vegetation removal for road and well pad construction could alter existing drainage patterns and accelerate gully and rill erosion. Effects can vary based on soil type, texture, moisture content, depth, and slope.

Though in general it is known what sorts of disturbance contribute to soil compaction, erosion, and losses of soil quality during oil and gas exploration and production activities (i.e., use of heavy equipment, removal of soil material, and mixing of soil horizons), impacts to soil from mineral extraction would be analyzed under additional site-specific EAs when an action is proposed and specifics such as location, well depth, water consumption needs, and area of disturbance are known. Through this process, specific mitigation measures and BMPs would be attached as COAs for each proposed activity.

Based on the “comparatively small extent” of reasonably foreseeable mineral exploration and extraction (less than 0.5 percent) in the Planning Area, and required implementation of COAs such as reclamation and BMPs (see Appendix E – Soil Resources) intended to offset effects, the effects of mineral extraction

on soil resources are expected to be minimal (Ely Proposed RMP/FEIS, Section *Geology and Mineral Extraction*, pages 4.4-4 – 4.4-5).

Cumulative Effects

The Ely Proposed RMP/FEIS defines the cumulative effects area for soil resources as the Planning Area and a small portion of the Colorado River Basin that includes portions of the Muddy River and Virgin River drainages. This EA bases impacts analysis on the RFFD analyzed for the Ely District RMP and therefore tiers to and incorporates by reference the cumulative impacts section for soil resources in the Ely Proposed RMP/FEIS (page 4.28-30 – 4.28-31). The analysis discloses that impacts on soils from producing commodities such as livestock, recreation, wild horses, and minerals would remain similar to or decrease from current condition and management while impacts on short and long-term soil erosion and sedimentation from vegetation treatments would increase.

When combing the direct and indirect impacts to soil resources from oil and gas exploration and development with past, present, and reasonably foreseeable future actions such as those described above, impacts would be minimal due to the scale of development presented in the RFFD (less than 0.5 percent of the Planning Area) and COAs and BMPs that would further reduce impacts to soils.

Vegetation

Affected Environment

The Ely Proposed RMP/FEIS describes the existing conditions, trends, and current management of vegetation resources including shrub lands, forests and woodlands, and riparian/wetland areas within the Ely District Planning Area (pages 3.5-1 – 3.5-13). This EA tiers to and incorporates by reference the affected environment section for vegetation resources in the Ely Proposed RMP/FEIS. The analysis identifies five Major Land Resource Areas delineated by the U.S. Department of Agriculture Natural Resources Conservation Service modified to reflect updated soils data, which include Major Land Resource Area 25, 28A, 28B, 29, and 30. A description of each Major Land Resource Area with associated major plant indicators, elevation/topography, climate, acres and percent of the planning area, associated watershed, and special notes is included as Table 3.5-1 in the Ely Proposed RMP/FEIS on pages 3.5-2 – 3.5-3. Major vegetation types in the Ely District include Pinyon-juniper, Aspen, High-elevation conifer, Salt desert shrub, Sagebrush, Mountain mahogany, Mojave Desert vegetation, Riparian/wetland, and Nonnative seedlings. These vegetation communities are products of the various natural and human-related disturbances and environmental factors occurring during the past 200 years, such as livestock grazing and reduced frequency of fire.

Environmental Effects

The Ely Proposed RMP/FEIS describes the environmental consequences of geology and mineral extraction on vegetation resources within the Ely District Planning Area (page 4.5-10). This EA tiers to and incorporates by reference the environmental consequences section discussing effects of geology and mineral extraction on vegetation resources in the Ely Proposed RMP/FEIS. The analysis identifies 17,100 acres that remain open to mineral extraction, and anticipates no more than 17,100 non-contiguous acres of disturbance to vegetation from minerals development, which includes not only oil and gas extraction. Areas of soil compaction that result from mineral exploration, development, and production with heavy machinery could inhibit plant vigor and reclamation.

Though in general it is known what sorts of disturbance contribute to loss of vegetation vigor and reclamation success during oil and gas exploration and production activities (i.e., use of heavy equipment, removal of soil material, mixing of soil horizons, and removal of vegetation), impacts to vegetation from mineral extraction activities would be analyzed under additional site-specific EAs when an action is proposed and specifics such as location, well depth, water consumption needs, and area of disturbance are

known. Through this process, specific mitigation measures and BMPs would be attached as COAs for each proposed activity.

Based on the 17,100 non-contiguous acres of reasonably foreseeable mineral exploration and extraction in the Planning Area, of which are largely associated with surface mining not oil and gas extraction, and required implementation of COAs such as reclamation and BMPs (see Appendix E – Vegetation Resources) intended to offset effects, the effects of mineral extraction on vegetation resources are expected to be minimal (Ely Proposed RMP/FEIS, page 4.5-10).

Cumulative Effects

The Ely Proposed RMP/FEIS defines the cumulative effects area for vegetation resources as the Planning Area. This EA bases impacts analysis on the RFFD analyzed for the Ely District RMP and therefore tiers to and incorporates by reference the cumulative impacts section for vegetation resources in the Ely Proposed RMP/FEIS (page 4.28-32 – 4.28-33). The analysis discloses that impacts to vegetation resources in the Planning Area have primarily included historic mining activities and other human-caused surface disturbances, wildland fires and fire suppression, and historic grazing practices. Present impacts to vegetation resources include wildlife management, wild horse management, wildland fires, and watershed management. Additionally, other factors beyond Ely District management also have impacted vegetation resources, including drought, insects, wildland fire, and introduction of invasive species from disturbances on nearby private lands.

When combing the direct and indirect impacts to vegetation resources from oil and gas exploration and development with past, present, and reasonably foreseeable future actions such as those described above, impacts would be minimal due to the scale of development presented in the RFFD (less than 0.5 percent of the Planning Area) and COAs and BMPs that would further reduce impacts to vegetation resources.

Forest/Woodland and Other Plant Products

Affected Environment

The Ely Proposed RMP/FEIS describes the existing conditions, trends, and current management of forest and woodland products and other plant products within the Ely District Planning Area (pages 3.17-1 – 3.17-4). This EA tiers to and incorporates by reference the affected environment section for forest/woodland and other plant products in the Ely Proposed RMP/FEIS. The analysis describes typical uses of vegetation resources (i.e. cultural, social, and economic) in the Planning Area and woodland volumes in the Planning Area. It also discusses the collection of cacti and yucca in Nevada, which requires a permit according to Nevada State Law (NRS 527.060). Section 3.17.2 on page 3.17-2 of the Ely Proposed RMP/FEIS describes an increasing availability of pinyon and juniper for use as fuelwood and other products while the trend in usage of forest/woodland and other plant products remains static.

Environmental Effects

The Ely Proposed RMP/FEIS describes the environmental consequences of geology and mineral extraction on vegetation resources within the Ely District Planning Area (page 4.5-10). The Ely Proposed RMP/FEIS at page 4.7.-1 states “Forest/woodland and other plant products would be affected by activities that modify the quantity and quality of vegetation resources either directly or indirectly.” This EA tiers to and incorporates by reference the environmental consequences section discussing effects of geology and mineral extraction on vegetation resources in the Ely Proposed RMP/FEIS, since effects to forest/woodland and other plant products were included in the vegetation section. See Environmental Effects for Vegetation above.

Cumulative Effects

The Ely Proposed RMP/FEIS defines the cumulative effects area for forest/woodland and other plant products as pinyon-juniper woodlands throughout east-central Nevada. This EA bases impacts analysis on the RFFD analyzed for the Ely District RMP and therefore tiers to and incorporates by reference the cumulative impacts section for vegetation resources and forest/woodland and other plant products in the Ely Proposed RMP/FEIS (pages 4.28-32 – 4.28-33, pages 4.28-62 – 4.28-63). The analysis discloses that impacts to forest/woodland and other plant products have primarily included historic mining activities and other consumptive uses of fuelwood, various human-caused surface disturbances, wildland, and historic grazing practices. Surface disturbances, post early 1900s, and fire have affected a small percentage of the Planning Area, although fuelwood harvest occurred over vast areas during the mid to late 1800s and early 1900s. Current woodland conditions have been heavily influenced by aggressive fires suppression throughout the Planning Area. Climate fluctuations and the aforementioned past actions have contributed to the expansion of pinyon pine and juniper into areas once dominated by sagebrush. Present actions affecting vegetation composition and ecological health include livestock grazing, wild horse management, wildlife fire management, watershed management, spread and control of invasive species, and to a lesser degree in localized areas, harvest of forest/woodland and other plant products, geology and mineral extraction, rights-of-way, transportation, wildlife management, and recreation. Natural factors such as drought and wildland fire also affect production of forest/woodlands and other plant products.

When combing the direct and indirect impacts to vegetation resources from oil and gas exploration and development with past, present, and reasonably foreseeable future actions such as those described above, impacts would be minimal due to the scale of development presented in the RFFD (less than 0.5 percent of the Planning Area) and COAs and BMPs that would further reduce impacts to vegetation resources and forest/woodland and other plant products.

Noxious and Invasive Weed Management

Affected Environment

The Ely Proposed RMP/FEIS describes the existing conditions, trends, and current management of noxious and invasive weeds within the Ely District Planning Area (pages 3.21-1 – 3.21-5). This EA tiers to and incorporates by reference the affected environment section for noxious and invasive weed management in the Ely Proposed RMP/FEIS. Table 3.1-1 provides a list of noxious weeds designated by the State of Nevada that are known to occur in the Planning Area, which are common impediments to management objectives within the Great Basin as they cause economic and environmental hard or harm to human health. Additional species have been designated since the Record of Decision for the Ely District RMP, which can be found online on the USDA NRCS Introduced, Invasive, and Noxious Plants List. Table 3.21-2 provides a list of invasive plant species known to occur in the Planning Area, which are of concern because of expanding distribution and adverse effects to native ecological systems. Species of highest concern include Russian knapweed, tall whitetop, tamarisk, dalmation toadflax, spotted knapweed, cheatgrass, halogeton, sahara mustard, yellow starthistle, and hoary cress. Several species of noxious and invasive weeds are expanding throughout the Planning Area, which has altered fire regimes, diminished forage for animals, and decreased productivity of the land. The Ely District adhered to the concept of integrated weed management and uses the most current species lists developed by the Nevada Department of Agriculture.

Environmental Effects

The Ely Proposed RMP/FEIS describes the environmental consequences of geology and mineral extraction on noxious and invasive weed management within the Ely District Planning Area (page 4.21-4). This EA tiers to and incorporates by reference the environmental consequences section discussing effects of geology and mineral extraction on noxious and invasive weed management in the Ely Proposed

RMP/FEIS. The analysis discusses the introduction of noxious and invasive weeds as a function of vectors such as animals, winds, and vehicles that transport plant material to and within the planning area, and ground disturbances that promote their establishment (Ely Proposed RMP/FEIS, page 4.21-1). The analysis identifies 17,100 acres of potential disturbance from mineral extraction based on the RFFD, and states on pages 4.21-4 – 4.21-5, "Road construction, use, abandonment, and maintenance related to mineral development all provide the potential to transport and proliferate weeds." There is moderate to low risk for the introduction and spread of noxious and invasive weeds due to current low levels of mineral development, assuming compliance with leases, permits, and BMPs contained within them.

Though in general it is known what sorts of disturbance contribute to noxious and invasive weed spread during oil and gas exploration and production activities (i.e., transport of seeds via wind, animals, and vehicles and ground disturbance from construction), impacts to vegetation from mineral extraction activities would be analyzed under additional site-specific EAs when an action is proposed and specifics such as location, well depth, water consumption needs, and area of disturbance are known. Through this process, a weeds risk assessment and area inventory or consultation of the district weeds database would occur and specific mitigation measures and BMPs would be attached as COAs for each proposed activity.

Based on the 17,100 acres of reasonably foreseeable mineral exploration and extraction in the Planning Area, of which are largely associated with surface mining not oil and gas extraction, and required implementation of COAs such as reclamation and BMPs (see Appendix E – Noxious and Invasive Weed Management) intended to offset effects, the effects of mineral extraction on noxious and invasive weed management are expected to be moderate to low (Ely Proposed RMP/FEIS, page 4.21-5).

Cumulative Effects

The Ely Proposed RMP/FEIS defines the cumulative effects area for noxious and invasive weed management as the Planning Area and surrounding areas that could be the source of weed seeds. This EA bases impacts analysis on the RFFD analyzed for the Ely District RMP and therefore tiers to and incorporates by reference the cumulative impacts section for noxious and invasive weed management in the Ely Proposed RMP/FEIS (pages 4.28-70 – 4.28-71). Past actions that have affected noxious and invasive weed management include historic mining activities, road construction, vehicle traffic, local agriculture, other human-caused surface disturbances, wildland fires, historic grazing practices, and drought. Present actions include agriculture, livestock grazing, wild horse management, mineral development and other construction activities, drought, wildland fires, insect infestations, vegetation and watershed treatments, land disposal actions, recreation, highway traffic, and off-highway vehicle use.

When combing the direct and indirect impacts to noxious and invasive weed management from oil and gas exploration and development with past, present, and reasonably foreseeable future actions such as those described above, impacts would be minimal due to the scale of development presented in the RFFD (less than 0.5 percent of the Planning Area) and COAs and BMPs that would further reduce impacts to noxious and invasive weed management.

Recreation

Affected Environment

The Ely Proposed RMP/FEIS describes the existing conditions, trends, and current management of recreation resources within the Ely District Planning Area (pages 3.15-1 – 3.15-3). This EA tiers to and incorporates by reference the affected environment section for recreation resources in the Ely Proposed RMP/FEIS. Recreation in the planning area typically consists of casual and dispersed uses including off-highway vehicle use, hunting, fishing, camping, cross-country skiing, horseback riding, caving, geocaching, rock climbing, mountain biking, and cultural tourism. The analysis recognizes that recreation visits to the Ely District have been increasing largely due to local (Lincoln and White Pine Counties) and regional (Clark County and western Utah) population growth. Activities such as rock climbing,

bouldering, mountain biking, and caving are increasing in popularity throughout the western U.S, including within the Ely District. Off-highway vehicle use has also been increasing within the Ely District.

Recreation is managed in the planning area through the designation of special recreation management areas and extensive recreation management areas (Ely Proposed RMP/FEIS, Section 3.15.3 at 3.15-1). The goal of special recreation management areas is to provide specific recreation activity and experience opportunities, while extensive recreation management areas usually include primitive recreation sites and minimal facilities. There are three extensive recreation management areas within the Ely District consisting of 4.24, 3.82, and 3.5-million acres each. Visitors to these recreation management areas are expected to be self-reliant when participating in recreational activities. The Ely District also manages for competitive recreation events, commercial enterprises, and other organized events through the use of Special Recreation Permits (SRPs). The majority of SRPs are issued for outfitting and guiding activities, and for off-highway vehicle events (Ely Proposed RMP/FEIS, Section 3.15.3 at page 3.15-3).

Environmental Effects

The Ely Proposed RMP/FEIS describes the environmental consequences of geology and mineral extraction on recreation within the Ely District Planning Area (page 4.15-4). This EA tiers to and incorporates by reference the environmental consequences section discussing effects of geology and mineral extraction on recreation resources in the Ely Proposed RMP/FEIS. The analysis identifies 17,100 acres of potential disturbance from mineral extraction based on the RFFD with "a minimal chance for interaction with recreation activities" (page 4.15-4).

Though in general it is known what sorts of disturbance interact with recreation quality during oil and gas exploration and production activities (i.e., impeded visual quality from development, impeded access and/or additional access to historically inaccessible sites), impacts to recreation from mineral extraction activities would be analyzed under additional site-specific EAs when an action is proposed and specifics such as location, well depth, water consumption needs, and area of disturbance are known. Through this process, specific mitigation measures and BMPs (see Appendix E – Travel Management and Off-Highway Vehicle Use and Recreation) would be attached as COAs for each proposed activity.

Cumulative Effects

The Ely Proposed RMP/FEIS defines the cumulative effects area for recreation resources as the Planning Area and a population centers outside the planning area within a reasonable driving distance for recreational activities (e.g., Clark County). This EA bases impacts analysis on the RFFD analyzed for the Ely District RMP and therefore tiers to and incorporates by reference the cumulative impacts section for recreation in the Ely Proposed RMP/FEIS (pages 4.28-58 – 4.28-59). The analysis discloses that the primary factor involved for impacts to recreation is the quantity of land available for recreational activities, and the quality of recreational opportunities available upon that land. However, many activities have a mixed impact on recreation as a whole, and as one type of recreational opportunity is lost another might form.

When combining the direct and indirect impacts to recreation resources from oil and gas exploration and development with past, present, and reasonably foreseeable future actions such as those described above, impacts would be minimal due to the scale of development presented in the RFFD (less than 0.5 percent of the Planning Area) and COAs and BMPs that would further reduce impacts to recreation.

Wild Horses

Affected Environment

The Ely Proposed RMP/FEIS describes the existing conditions, trends, and current management of Wild Horses within the Ely District Planning Area (pages 3.8-1 – 3.8-7). The Ely District RMP (2008) designated six Herd Management Areas (HMA) covering 3.7 million acres. After the passage of the Wild Free-Roaming Horse and Burro Act in 1971, a comprehensive inventory was conducted in the planning area. It was determined that some herds exceeded a level that could be supported on a long-term basis by the available forage and water. To control the number of wild horses, gather operations are sporadically held within the HMAs. Gathers help to maintain appropriate management levels and achieve a thriving natural ecological balance while maintaining a multiple use relationship, as well as achieving rangeland health standards.

Environmental Effects

The Ely Proposed RMP/FEIS describes the environmental consequences of geology and mineral extraction on wild horses within the Ely District Planning Area (pages 4.8-6 – 4.8.-7). This EA tiers to and incorporates by reference the affected environment section for wild horses in the Ely Proposed RMP/FEIS. Potential short-term impacts to wild horses from geology and mineral extraction include vegetation loss, habitat fragmentation, herd displacement, and increased noise and human presence. Potential long-term impacts include irretrievable loss of habitat, change in vegetation composition, and continuing habitat fragmentation.

Though in general it is known what sorts of disturbance contribute to impacts to wild horses during oil and gas exploration and production activities (i.e., increased human and motorized activity that leads to displacement and installation of fences that disrupts free roaming wild horse movement), impacts to wild horses from mineral extraction activities would be analyzed under additional site-specific EAs when an action is proposed and specifics such as location, well depth, water consumption needs, and area of disturbance are known. Through this process, specific mitigation measures and BMPs (see Appendix E – Wild Horses) would be attached as COAs for each proposed activity.

Cumulative Effects

The Ely Proposed RMP/FEIS defines the cumulative effects area for wild horses is the array of existing herd management areas, a buffer around these areas that horses occasionally use and a few herd management areas that abut the planning area boundary with the associated horse herd commonly cross to adjoining areas outside the planning area. This EA bases impacts analysis on the RFFD analyzed for the Ely District RMP and therefore tiers to and incorporates by reference the cumulative impacts section for wild horses in the Ely Proposed RMP/FEIS (page4.28-44-4.28-45). The analysis discloses that impacts to wild horses related to the proposed RMP would generally improve habitat for wild horse hers on a long-term basis, while many of the potential impacts associated with interrelated projects would reduce habitat, but typically to a lesser degree. The overall cumulative effect would be general improvement in the habitat for long term hear health and viability.

When combining the direct and indirect impacts to wild horses from oil and gas exploration and development with past, present, and reasonably foreseeable future actions such as those described above, impacts would be minimal due to the scale of development presented in the RFFD (less than 0.5 percent of the Planning Area) and COAs and BMPs that would further reduce impacts to wild horses.

Appendix K-Leasing Preference Ratings for Nominated Lease Parcels

After review of Scoping comments received from November 21st to December 21st, 2022, 31 parcels located within the Caliente Field Office were not carried forward for analysis due to BLM policy (IM 2023-007 and IM 2023-008).

Leasing Preference Rating Based on the Following Criteria								
Parcel Information		Preference Criteria					Preference for Leasing	
Office	Parcel	1 Proximity to Existing Development	2 Habitat	3 Cultural Resources	4 Recreation/Other Resources	5 High Potential	High	Low
BFO	NV-2023-07-6966	High	High	High	High	High	X	
BFO	NV-2023-07-1529	Low	High	Low	High	Mod	X	
BFO	NV-2023-07-1531	Low	High	Low	High	Mod	X	
BFO	NV-2023-07-6916	Low	High	Low	High	Mod	X	
CFO	NV-2023-07-3157	Low	Low	High	High	Mod		X
CFO	NV-2023-07-3160	Low	Low	High	High	Mod		X
CFO	NV-2023-07-3163	Low	Low	Low	High	Mod		X
CFO	NV-2023-07-3166	Low	Low	Low	High	Mod		X
CFO	NV-2023-07-3169	Low	Low	High	High	Mod		X
CFO	NV-2023-07-3172	Low	Low	High	High	Mod		X
CFO	NV-2023-07-3175	Low	Low	Low	High	Mod		X
CFO	NV-2023-07-2913	Low	Low	Low	High	Mod		X
CFO	NV-2023-07-3178	Low	Low	Low	High	Mod		X
CFO	NV-2023-07-2925	Low	Low	Low	High	Mod		X
CFO	NV-2023-07-3191	Low	Low	High	High	Mod		X
CFO	NV-2023-07-5905	Low	Low	Low	High	Mod		X
CFO	NV-2023-07-5906	Low	Low	Low	High	Mod		X
CFO	NV-2023-07-5915	Low	Low	Low	High	Mod		X
CFO	NV-2023-07-5918	Low	Low	Low	High	Mod		X
CFO	NV-2023-07-5921	Low	Low	Low	High	Mod		X
CFO	NV-2023-07-5925	Low	Low	Low	High	Mod		X
CFO	NV-2023-07-5929	Low	Low	Low	High	Mod		X
CFO	NV-2023-07-5932	Low	Low	Low	High	Mod		X
CFO	NV-2023-07-5935	Low	Low	Low	High	Mod		X
CFO	NV-2023-07-5939	Low	Low	Low	High	Mod		X
CFO	NV-2023-07-2397	Low	Low	High	High	Low		X
CFO	NV-2023-07-4183	Low	Low	High	High	Mod		X
CFO	NV-2023-07-4202	Low	Low	High	High	Mod		X
CFO	NV-2023-07-4234	Low	Low	Low	High	Mod		X
CFO	NV-2023-07-2939	Low	Low	Low	High	Mod		X
CFO	NV-2023-07-5868	Low	Low	Low	High	Mod		X
CFO	NV-2023-07-5872	Low	Low	Low	High	Mod		X
CFO	NV-2023-07-5881	Low	Low	Low	High	Mod		X
CFO	NV-2023-07-5885	Low	Low	Low	High	Mod		X
CFO	NV-2023-07-5892	Low	Low	Low	High	Mod		X

Appendix L- Summary of Public Comments and Responses

Comment letters were received from the following entities or individuals: National Wildlife Federation and the Nevada Wildlife Federation, Theodore Roosevelt Conservation Partnership, United States Environmental Protection Agency, Nevada Department of Wildlife, Friends of the Earth, Western Environmental Law Center et al. and two individuals who did not provide their names.

Commenter	Identifier	Comment	Response
Not Provided-1	NP1-1	Please don't allow more oil and gas drilling. It would be insane to knowingly allow more drilling that would add to the dangerous climate crisis. This crisis threatens the sustained yield of renewable resources that BLM is required under FLPMA to maintain. I beg BLM to change course before it is too late.	Thank you for your comment.
Not Provided-2	NP2-1	I am very concerned that the BLM's dominant management culture can adversely affect the quality, objectivity, and thoroughness of this and other BLM analyses. I totally agree with the open letter to Interior Secretary Haaland relating to necessary BLM management NEPA and other reforms. BLM clearly faces increasing challenges from the climate and extinction crisis, rapidly changing environmental and social conditions, and stronger conservation policies. BLM needs to have the ability to better respond to those challenges, conditions, and policies.	Thank you for your comment.
National Wildlife Federation and the Nevada Wildlife Federation.	NWF-1	We applaud the BLM's proposal to defer nearly all of the parcels it considered for leasing in its initial sale announcement as proposed under Alternative A – Proposed Action. These deferrals will avoid development in areas with high resource conflict, including habitat important for big game, Greater sage-grouse, and other wildlife. Moreover, we appreciate the agency's proposal to avoid leasing lands with low or no potential for development, cultural and spiritual resources, and recreational opportunities. This lease sale is an example of how the BLM can and should critically and thoroughly consider trade-offs between energy development and other multiple uses on public lands. The	Thank you for your comment.

		agency's approach in this lease sale, and its instruction memoranda on oil and gas leasing, appropriately implements the agency's mandate to manage public lands for multiple uses, including wildlife, recreation, cultural resources, wilderness, and resource extraction.	
National Wildlife Federation and the Nevada Wildlife Federation.	NWF-3	Consistent with the agency's proposal here, we urge the BLM to formalize these and other changes through a rulemaking. Such a rulemaking should clarify the agency's discretion to lease or not lease public lands, increase bonding requirements, prohibit leasing in lands with low or no potential for oil and gas development, and expand opportunities for public participation and Tribal consultation.	Comment noted.
Theodore Roosevelt Conservation Partnership	TRCP-2	It is refreshing to find that, upon considering the several statutes, Instruction Memorandums and Secretarial Orders pertaining to oil and gas and big game, BLM chose to reduce the number of parcels down to the four that will be included in the upcoming sale. The TRCP would like to express our sincere thanks to the Ely District for considering all the available science and directives and making the proper decision to eliminate all but four parcels from the Q3 sale.	Thank you for your comment.
Environmental Protection Agency-Region 9	EPA-1	The Draft EA states, "If leases are issued and lease operations are proposed in the future, BLM would conduct additional project specific NEPA analysis when an Application for Permit to Drill (APD) or other exploration, development or production project application is submitted" (p, 15). We acknowledge BLM's commitment to conduct further NEPA analyses at the APD and other phases of development, and request that the BLM provide state and local agencies, the EPA, and the public, including Tribes, with adequate notice of document availability and a specified comment period, via BLM E-Planning, to provide further	Thank you for your comment.

		input at that time. Under our authorities, the EPA would like to take advantage of opportunities to comment and provide our recommendations for robust and consistent environmental analyses at each stage of the BLM's NEPA process for oil and gas projects.	
Environmental Protection Agency-Region 9	EPA-2	The Draft EA indicates that 14 Tribes were sent Certified Letters of invitation for formal consultation on the lease parcels on March 1, 2023, and that the "…opportunity for tribes to initiate formal Government-to-Government consultation is on-going" (p. 13). We encourage the BLM to include documentation in the Final EA of these consultations, as well as any activities to address concerns identified by Tribal Governments.	A description of the public involvement process including all Native American coordination is included in section 1.8 of the EA. If new information is presented, this section will be updated as appropriate.
Nevada Department of Wildlife	NDOW-1	Regarding the Proposed Action, we understand any mitigation and conservation measures not already required as lease stipulations would be analyzed in a site-specific NEPA document, and be incorporated, as appropriate, into conditions of approval of an application to drill permit, plan of development, and/or other use authorization. NDOW looks forward to participating in such future, site-specific NEPA analysis with the BLM and other applicable entities.	Thank you for your comment.
Friends of the Earth	FotE-1	The proposal for the upcoming oil and gas lease sales threaten Nevada's most critical public lands. Fossil fuel extraction threatens to poison public lands and pollute surrounding communities. We cannot prioritize oil and gas drilling over the health of people and the planet. Continuing to extract and burn fossil fuels in the midst of a global climate crisis is a grave mistake. The recently released IPCC report was clear: we cannot afford new and expanded fossil fuel production. Recent wildfires and intensifying hurricanes demonstrate the dangers of what's to come if we continue to allow public lands to be a tool for the fossil fuel industry	Thank you for your comment. The BLM responds to Expressions of Interest (EOIs) to lease federal oil and gas resources through a competitive leasing process. The need for the action is established by the BLM's responsibility under the Mineral Leasing Act of 1920 (MLA), as amended, to make mineral resources, such as oil and gas, available for development as part of the BLM's multiple-use and sustained-yield mandate. The BLM's mandate, as derived from various laws, including the MLA and the Federal Land Policy and Management Act of 1976 (FLPMA), as amended, is to make mineral resources, such as oil and gas, available for development as part of the BLM's multiple-use and sustained-yield mandate. See EA Sections 1.7 for information regarding the BLM's requirements under MLA,

		to line their pockets. I urge you to cancel the upcoming oil and gas lease sales on Nevada's public lands.	FLPMA, and other statues and regulations. The BLM analyzes potential impacts from climate change and GHG in detail in the EA (see Sections 3.2.0 and 4.3.0). The document also incorporates by reference the 2021 BLM Specialist Report on Annual Greenhouse Gas Emissions and Climate Trends which provides a more robust assessment of cumulative emissions, climate change impacts, and reputable climate science sources.
Western Environmental Law Center et al.	WELC-1	BLM Is Not Required to Hold a Lease Sale or Issue Any Leases—Even Following The Passage of the Inflation Reduction Act.	The BLM responds to Expressions of Interest (EOIs) to lease federal oil and gas resources through a competitive leasing process. The need for the action is established by the BLM's responsibility under the Mineral Leasing Act of 1920 (MLA), as amended, to make mineral resources, such as oil and gas, available for development as part of the BLM's multiple-use and sustained-yield mandate under the Federal Land Policy and Management Act of 1976 (FLPMA), as amended.See EA Sections 1.7 for information regarding the BLM's requirements under MLA, FLPMA, and other statues and regulations.
Western Environmental Law Center et al.	WELC-2	The BLM May Not Assume GHG Reductions based on Passage of the IRA.	The BLM analyzes potential impacts from climate change and GHG in detail in the EA (see Sections 3.2.0 and 4.3.0). The document also incorporates by reference the 2021 BLM Specialist Report on Annual Greenhouse Gas Emissions and Climate Trends which provides a more robust assessment of cumulative emissions, climate change impacts, and reputable climate science sources. The EA analysis does not assume GHG reductions based on passage of the IRA.
Western Environmental Law Center et al.	WELC-3	Any New Leasing Authorized by the IRA Runs Counter to Climate Science.	Please see above response to comment WELC-2.
Western Environmental Law Center et al.	WELC-4	Provisions of the IRA Designed to Reduce GHGs may have the Opposite Effect.	The BLM analyzes potential impacts from climate change and GHG in detail in the EA (see Sections 3.2.0 and 4.3.0). The BLM quantifies direct, indirect, and cumulative emissions from the combustion of oil and gas and discusses the significance of these emissions. The BLM reviewed the environmental impacts of leasing, including quantifying and forecasting aggregate GHG emissions from oil and gas development and addressing the environmental effects of downstream oil and gas use including the effects on climate change. The EA also incorporates by reference the 2021 BLM Specialist Report on Annual

			Greenhouse Gas Emissions and Climate Trends which provides a more robust assessment of cumulative emissions, climate change impacts, and reputable climate science sources.
Western Environmental Law Center et al.	WELC-5	The IRA's Emissions Reduction Potential Depends on Implementation.	The BLM analyzes potential impacts from climate change and GHG in detail in the EAs (see Sections 3.2.0 and 4.3.0). The documents also incorporate by reference the 2021 BLM Specialist Report on Annual Greenhouse Gas Emissions and Climate Trends which provides a more robust assessment of cumulative emissions, climate change impacts, and reputable climate science sources. The EA analysis does not assume GHG reductions based on passage of the IRA.
Western Environmental Law Center et al.	WELC-6	BLM must disclose which wind or solar rights-of-way are supported by the Nevada oil and gas lease sale and should establish publicly accessible tracking for renewable rights-of-way.	BLM issued updated oil and gas leasing guidance on 11/21/22, which includes seven IMs, that will enable consistent implementation of the IRA's changes to agency's oil and gas programs. See section 1.7 of the EA.
Western Environmental Law Center et al.	WELC-7	BLM's NEPA Analysis must Address whether any Proposed Leasing is Consistent with U.S. Climate Commitments and Address Its Full Costs and Benefits.	The BLM analyzes potential impacts, including cumulative impacts, from climate change and GHG in detail in the EA (see Sections 3.2.0 and 4.3.0). The BLM is not constrained to use specific methodologies, as long as the agency asserts a rational basis for the methodology it chooses. See Hillsdale Envtl. Loss Prevention, Inc. v. U.S. Army Corps of Eng'rs, 702 F.3d 1156, 1177-1178. The emissions used in this analysis are estimated using the 2022 BLM Lease Sale Emissions Tool and evaluated with the EPA GHG equivalency calculator. The BLM also includes a monetized social cost of carbon analysis for the estimated emissions associated with future potential development. Estimating the economic benefits (change in social welfare) associated with oil and gas leasing is not feasible, nor is it required for NEPA. The BLM analyzes the impacts associated with the alternatives using the best available information, which is typically not monetized estimates of benefits or costs. The BLM's mandate, as derived from various laws, including the MLA and the Federal Land Policy and Management Act of 1976 (FLPMA), as amended, is to make mineral resources, such as oil and gas, available for development as part of the BLM's multiple-use and sustained-yield mandate. See EA Section 1.7 for information regarding the BLM's requirements under MLA, FLPMA, and other statues and regulations. Chapter 2 of the 2021

			BLM Specialist Report on Annual GHG Emissions and Climate Trends discusses the relationship between BLM's coal, oil, and gas leasing programs with other laws and policies and the federal and state level.
Western Environmental Law Center et al.	WELC-8	BLM Should Defer New Leasing until New Oil and Gas Rules are Promulgated.	The BLM's purpose in preparing the EA is to respond to Expressions of Interest (EOIs) to lease federal oil and gas resources through a competitive leasing process. The need for the action is established by the BLM's responsibility under the Mineral Leasing Act of 1920 (MLA), as amended, to make mineral resources, such as oil and gas, available for development as part of the BLM's multiple-use and sustained-yield mandate under the Federal Land Policy and Management Act of 1976 (FLPMA), as amended.. See EA Sections 1.7 for information regarding the BLM's requirements under MLA, FLPMA, and other statutes and regulations BLM issued updated oil and gas leasing guidance on 11/21/22, which includes seven IMs, that will enable consistent implementation of the IRA's changes to agency's oil and gas programs.
Western Environmental Law Center et al.	WELC-9	WORC v. BLM requires BLM to analyze the climate and non-climate public health effects of downstream use of fossil fuels from oil and gas leases.	The July 2023 EYDO Lease Sale EA analysis convers a broad range of non-climate resources potentially affected by the lease sale, including but not limited to surface and groundwater (3.2.2), hazardous wastes (3.2.10), and environmental justice (3.2.11).
Western Environmental Law Center et al.	WELC-10	Adequate NEPA Review Under Secretarial Order 3399 Is Required Prior to Offering These Leases for Sale.	The BLM is complying with the direction of Secretarial Order 3399 regarding application of the CEQ regulations. Secretarial Order 3399 instructs the BLM to identify opportunities to reduce GHG emissions. The BLM has quantified and disclosed potential emissions from the lease sale based on the methodologies outlined in the 2021 Specialists Report using the best available data and in accordance with the requirements of Secretarial Order 3399. The report provides a cumulative assessment of potential GHG emissions from the federal mineral estate relative to several metrics and analysis levels at various scopes and scales. The Report also identifies potential mitigation options that can be applied to any subsequent lease development via conditions of approval once specific plans of development are submitted for analysis and permitting. If/when a proposed action for development is submitted, the BLM can determine appropriate

			mitigation measures to reduce/offset GHG emissions that are not already required by law or proposed by the operator.
Western Environmental Law Center et al.	WELC-11	BLM Must Prepare an EIS to Address the Cumulative Impacts of All Lease Sales Proposed for 2023.	The BLM has prepared multiple EIS's covering the lands BLM is considering making available for competitive auction. The BLM has disclosed the GHG emissions from the Proposed Action and provided context for those emissions compared to existing federal onshore GHG emissions in the state and nationally. The BLM has included an evaluation of the climate change impacts that could result from the proposed action and incorporated by the reference the 2021 BLM Specialists Report on Annual Greenhouse Gas Emissions and Climate Trends which provides a more robust assessment of cumulative emissions, climate change impacts, and reputable climate science sources. If/when a proposed action for development is submitted, the BLM can determine appropriate mitigation measures to reduce/offset GHG emissions that are not already required by law or proposed by the operator. Climate impacts are one of many factors that are considered in the NEPA analysis to evaluate the significance of a proposed action and the BLM's exercise of its discretion in deciding leasing actions.
Western Environmental Law Center et al.	WELC-12	BLM Must Prepare a Programmatic EIS to take a Hard Look at the Impacts of the Resumption of Federal Oil and Gas Leasing and to Avoid Any New Greenhouse Gas Pollution.	Please see below response to comment WELC-13.
Western Environmental Law Center et al.	WELC-13	The Incremental Nature of Climate Change Requires a Programmatic EIS.	The BLM analyzes potential impacts (including cumulative effects) from climate change and GHG in detail in the EA (see Sections 3.2.0 and 4.3.0). The EA incorporates by reference information from the 2021 BLM Specialist Report on Annual Greenhouse Gas Emissions and Climate Trends. NEPA allows agencies to prepare an EA "on any action at any time in order to assist agency planning and decision-making" (43 CFR 1501.3; see also 43 CFR 1508.9 [defining "environmental assessment"]). An agency need not prepare an EIS if it determines the action will not have significant effect on the human environment or where such effects may be mitigated by adoption of appropriate measures. The level of environmental analysis conducted by the BLM for the July 2023 Lease Sale is consistent with the purpose and requirements of NEPA.

Western Environmental Law Center et al.	WELC-14	There Is a Small Remaining Window to Avoid the Most Catastrophic Effects of Climate Change and a Programmatic Review Is Necessary to Inform Future Action.	The BLM analyzes potential impacts (including cumulative effects) from climate change and GHG in detail in the EA (see Sections 3.2.0 and 4.3.0). The EA incorporates by reference information from the 2021 BLM Specialist Report on Annual Greenhouse Gas Emissions and Climate Trends. NEPA allows agencies to prepare an EA "on any action at any time in order to assist agency planning and decision-making" (43 CFR 1501.3; see also 43 CFR 1508.9 [defining "environmental assessment"]). An agency need not prepare an EIS if it determines the action will not have significant effect on the human environment or where such effects may be mitigated by adoption of appropriate measures. If and when a proposed action for development is submitted, the BLM can determine appropriate mitigation measures to reduce or offset GHG emissions that are not already required by law or proposed by the operator. The level of environmental analysis conducted by the BLM for the July 2023 Lease Sale is consistent with the purpose and requirements of NEPA.
Western Environmental Law Center et al.	WELC-15	BLM Must Complete the Analysis Begun in the 2020 and 2021 BLM Specialist Reports.	The BLM completed a social cost of greenhouse gases analysis as part of the review process for the proposed lease sale. The analyses for the July 2023 sale incorporate the data from the 2021 BLM specialist report on greenhouse gas emissions and climate trends and build on it. The analysis in the July 2023 EA includes a cumulative analysis of impacts from the federal oil and gas leasing program in the context of local, regional, and national emissions. While BLM is not able to state specific impacts that the sales going forward will have on human health and the environment, the BLM has disclosed to the greatest extent feasible the potential impacts from these sales as part of a larger context.
Western Environmental Law Center et al.	WELC-16	A Programmatic EIS for the Federal Oil and Gas Program Is Consistent with The Department's Review of the Federal Coal Leasing Program.	BLM oil and gas lease sales are administered on a State Office by State Office basis for important statutory, policy, and administrative reasons, with the respective Director of each State Office asserting delegated authority over sales administered by that administrative office. It is therefore necessary to effective decision making that the NEPA analysis for a lease sale focus on the jurisdictional area of the administering State office. The offering of leases for different states at the same time does not

			constitute a connected action under NEPA. BLM recognizes the national and global impact potential of greenhouse gas (GHG) emissions and the likewise broad scope of climate change impacts related to them and has therefore prepared annual BLM Specialist Reports on Annual Greenhouse Gas Emissions and Climate Trends. These reports account for current and projected future agency wide GHG emissions related to fossil fuel actions on Public Land, national and global GHG emission trends, and potential climate impacts related to these emissions. The report is specifically referenced in and incorporated into each State Office lease sale NEPA analysis and provides the information necessary to properly assess agency wide, nationwide, and global reasonably foreseeable cumulative impacts of each State Office lease sale.
Western Environmental Law Center et al.	WELC-17	BLM Has Failed to Consider an Adequate Range of Alternative: No-Leasing Alternative, BLM Failed to Consider Proposed Alternatives, BLM Must Consider an Alternative That Protects Groundwater, BLM Must Consider an Alternative that Minimizes Methane Waste Through both Technology and Regulatory Authority.	While BLM offices in each state have the discretion to determine which alternatives to consider through NEPA analysis, and which to consider and dismiss, the below provides a general discussion of why certain proposed alternatives were not analyzed in greater detail: No leasing Alternative: The 2021 BLM Specialist Report on GHG Emissions and Climate Trends was incorporated by reference in the Lease Sale EA and provides a detailed discussion and cumulative assessment of Federal oil and gas emissions and climate change impacts. Additionally, the concurrent offering of leases across multiple states does not constitute a connected action for purposes of NEPA analysis for several reasons: 1) The individual lease sales are not part of or dependent on a larger proposed action to proceed 2) The concurrent timing of offering the lease sales does not represent a connected action that authorizes concurrent development, or any development for that matter, to occur. The timing, scale, and locations of development that may occur as a result of the leasing actions will not be concurrent, and therefore do not represent similar connected actions for the purposes of NEPA analysis. Proposed Alternative of managed decline: NEPA directs the BLM to “study, develop, and describe appropriate alternatives to

			recommended courses of action in any proposal that involves unresolved conflicts concerning alternative uses of available resources" (42 USC 4332(E)). The suggested alternative constitutes an oil and gas program regulatory or policy preference rather than an alternative appropriate for consideration for the July 2023 EYDO lease sale. Additionally, the commenter does not identify what, if any, unresolved resource conflict associated with the sale would be resolved by consideration of this alternative, nor how such a proposal would be reasonably implemented. An explanation of the BLM's decision space based on the alternatives analyzed in detail is provided in EA Sections 2.1-2.3. As informed by the issues-based analysis in the EA, the BLM Authorized Officer retains the discretion to lease all of the nominated lease parcels, none of the nominated lease parcels, or some configuration of leasing and deferring nominated lease parcels. Site specific avoidance, minimization, and/or mitigation measures would be determined at the time of proposed lease development and attached as COAs to the APD. An agency need not prepare an EIS if it determines the action will not have significant effect on the human environment or where such effects may be mitigated by adoption of appropriate measures. The level of environmental analysis conducted by the BLM for the July 2023 Lease Sale is consistent with the purpose and requirements of NEPA. Alternative that protects groundwater: The commenter does not submit any evidence documenting that oil and gas development approved by BLM has contaminated groundwater or that offering these parcels for lease will significantly impact water resources. At the leasing stage, BLM completed a basin-wide assessment of the potential for inducted hydraulic fractures to communicate with existing fractures (or faults), thus potentially providing a pathway for gas or contaminates to pose a risk to water quality. The BLM also looked at distance and depth of existing water wells in relation to the formations likely to be targeted on the lease parcels. Based upon this review, the BLM concludes there would be no anticipated effects to usable groundwater if the lease parcels are developed. Cumulative impacts have been adequately

			disclosed in the RMP and the EA. Site specific water resource impacts of proposed operations would be addressed at the APD stage. An alternative that minimizes methane waste through both technology and regulatory authority: BLM may regulate emissions in the context of preventing waste, an issue that has recently prompted acute and occasionally conflicting judicial scrutiny. [see Wyoming v. DOI, 20-8073 (10th Cir.), and California Air Resources Board v. Bernhardt, Nos. 20-16793, 20-16794, 20-16801 (9th Cir.)]. To ensure it regulates within the bounds of the MLA, BLM is considering rulemaking what would detail when and how it will regulate emissions of methane and other gases released by flaring. Some states have a lease notice that is applied to each parcel, which provides: The lessee/operator is given notice that prior to project specific approval, additional air resource analyses may be required in order to comply with the NEPA, FLPMA, and/or other applicable laws and regulations. Analyses may include equipment and operations information, emission inventory development, dispersion modeling or photochemical grid modeling for air quality and/or air quality related value impact analysis, and/or emission control determinations. These analyses may result in the imposition of additional project-specific control measures to protect air resources.
Western Environmental Law Center et al.	WELC-18	The Draft EA and the 2021 BLM Specialist Report Fail NEPA's "Hard Look" Test with Regard to Analyzing Climate Impacts of Resuming Federal Oil and Gas Leasing.	Please see below responses to comments WELC-19 and WELC-20.
Western Environmental Law Center et al.	WELC-19	BLM Improperly Segmented Its NEPA Analysis of The Proposed Lease Sales.	The BLM has prepared multiple EIS's covering the lands BLM is considering making available for competitive auction. The BLM has disclosed the GHG emissions from the Proposed Action and provided context for those emissions compared to existing federal onshore GHG emissions in the state and nationally. The BLM has included an evaluation of the climate change impacts that could result from the proposed action and incorporated by the reference the 2021 BLM Specialists Report on Annual Greenhouse Gas Emissions and Climate Trends which provides a more robust

			assessment of cumulative emissions, climate change impacts, and reputable climate science sources. If/when a proposed action for development is submitted, the BLM can determine appropriate mitigation measures to reduce/offset GHG emissions that are not already required by law or proposed by the operator. Climate impacts are one of many factors that are considered in the NEPA analysis to evaluate the significance of a proposed action and the BLM's exercise of its discretion in deciding leasing actions.
Western Environmental Law Center et al.	WELC-20	Federal Fossil Fuel Emissions Are Significant Under NEPA. BLM improperly segmented its NEPA analysis and only analyzed GHG emissions using EPA's GHG equivalency calculator for this individual lease sale. We request BLM contextualize the GHG emissions of the 2023 lease sales by using the EPA GHG equivalency calculator to consider the GHG emissions over the average 30-year production life of the leases. We also request BLM contextualize the cumulative GHG emissions from the federal fossil fuel program using EPA's GHG equivalency calculator.	The BLM has already included a reference and example to the EPA GHG Equivalency calculator in the lease sale EA in addition to providing multiple comparisons and context for the lease sale emissions both annually and over the life of the lease. The additional information requested is not value-added for the decision maker. For example, contextualizing GHG emissions over the 30-year production life of a lease provides the same equivalency of 524,886 passenger vehicles but operating for 30-years instead of just a single year. Commenter has not provided information to show how this provides added value to the decision maker. Similarly, contextualizing the cumulative emissions equivalency and SC-GHG from the Federal fossil fuel program are just different ways of expressing the cumulative Federal emissions already contained in the EA. Comparing the cumulative equivalencies and SC-GHG to those of the Proposed Action is essentially the same as the comparison of the emissions comparison in the EA.
Western Environmental Law Center et al.	WELC-21	BLM Has the Ability to Provide For Meaningful And Measurable Mitigation Actions In The Context of Cumulative Climate Change Resulting From Global Emissions.	EA Section 3.2.0 discusses mitigation strategies designed to reduce GHGs and incorporates by reference information from the 2021 BLM Specialist Report on Annual GHG Emissions and Climate Trends. Analysis and approval of future development may include application of BMPs within BLM's authority, as COAs, to reduce or mitigate GHG emissions. Additional measures proposed at the project development stage also may be incorporated as applicant-committed measures by the project proponent or added to necessary air quality permits. Additional information on mitigation strategies, including emissions controls and offset options, are provided in Chapter 10 of the Annual GHG Report.

Western Environmental Law Center et al.	WELC-22	The Draft EA and the 2021 BLM Specialist Report Omit Analysis of the Compatibility of New Commitments of Federal Fossil Fuels with the U.S. Goal of Avoiding 1.5°C Warming.	The analysis requested is included for informational purposes in section 7.2 of the 2021 BLM Specialist Report on Annual GHG Emissions and Climate Trends, which was incorporated by reference in the lease sale EA. This analysis includes information from the United Nations emissions gap report which shows the difference between global emissions pathways required to limit warming to 1.5C or 2.0C (i.e., carbon budgets) with the anticipated emissions based on national commitments to reduce GHG emissions. At this time, there are no scientifically established standards, emissions thresholds, social cost allocations, carbon budgets, or otherwise, that can be used to inform analysis of GHG emissions and climate change with respect to determining the significance of an action for NEPA purposes. Until such time as the Department develops further tools to analyze the relative emissions impact of its activities nationwide, the BLM can analyze GHG emissions and climate impacts, and provide context and analysis for those emissions and impacts; the agency cannot determine significance for a proposed action based on GHG emissions or climate impacts alone. As detailed in the 2021 Specialist Report on GHGs, which BLM incorporated by reference, the BLM also looked at other tools to inform its analysis, including the MAGICC model (see Section 7.0 of the Specialists Report).
Western Environmental Law Center et al.	WELC-23	The Draft EA and the 2021 BLM Specialist Report Omit Analysis of the Global and National Over-Commitment of Fossil Fuels Relative to Global Carbon Budgets Necessary to Avoid 1.5°C Warming.	Please see above comment response to WELC-22.
Western Environmental Law Center et al.	WELC-24	The Draft EA and the 2021 BLM Specialist Report Fail to Adequately Quantify and Assess All Related Past, Present, and Reasonably Foreseeable Future GHG Emissions and Climate Impacts.	The BLM has prepared multiple EISs covering the lands BLM is considering making available for competitive auction. The BLM has analyzed the GHG emissions from the Proposed Action and provided context for those emissions compared to existing federal onshore GHG emissions in the state and nationally. The BLM has included an evaluation of the climate change impacts that could result from the Proposed Action and incorporated by reference the 2021 BLM Specialist Report on Annual Greenhouse Gas Emissions and Climate Trends which provides a robust assessment of cumulative emissions, climate change impacts, and

			reputable climate science sources. If and when a proposed action for development is submitted, the BLM can determine appropriate mitigation measures to reduce or offset GHG emissions that are not already required by law or proposed by the operator. Climate impacts are one of many factors that are considered in the NEPA analysis to evaluate the significance of a proposed action and the BLM's exercise of its discretion in deciding leasing actions.
Western Environmental Law Center et al.	WELC-25	BLM failed to assess the cumulative greenhouse gas emissions and impacts from recent and reasonably foreseeable federal offshore oil and gas lease sales.	The BLM has prepared multiple EISs covering the lands BLM is considering making available for competitive auction. The BLM has analyzed the GHG emissions from the Proposed Action and provided context for those emissions compared to existing federal onshore GHG emissions in the state and nationally. The BLM has included an evaluation of the climate change impacts that could result from the proposed action and incorporated by the reference the 2021 BLM Specialist Report on Annual Greenhouse Gas Emissions and Climate Trends which provides a more robust assessment of cumulative emissions, climate change impacts, and reputable climate science sources. If and when a proposed action for development is submitted, the BLM can determine appropriate mitigation measures to reduce or offset GHG emissions that are not already required by law or proposed by the operator. Climate impacts are one of many factors that are considered in the NEPA analysis to evaluate the significance of a proposed action and the BLM's exercise of its discretion in deciding leasing actions.
Western Environmental Law Center et al.	WELC-26	BLM also failed to assess the cumulative greenhouse gas emissions and impacts from recent and reasonably foreseeable federal fossil fuel lease sales and similar federal actions, as required by NEPA.	Please see above response to comment WELC-25.
Western Environmental Law Center et al.	WELC-27	BLM continues to fail to assess cumulative greenhouse gas emissions and impacts from recent and reasonably foreseeable non-federal oil and gas leasing and development projects. For example, just last year 10 states held 45 lease sales, selling tens of thousands of acres for oil and gas development	The BLM has prepared multiple EISs covering the lands BLM is considering making available for competitive auction. The BLM has analyzed the GHG emissions from the Proposed Action and provided context for those emissions compared to existing federal onshore GHG emissions in the state and nationally. The BLM has included an evaluation of the climate change impacts that could result from the proposed action and incorporated by reference the

			2021 BLM Specialist Report on Annual Greenhouse Gas Emissions and Climate Trends which provides a more robust assessment of cumulative emissions, climate change impacts, and reputable climate science sources. If and when a proposed action for development is submitted, the BLM can determine appropriate mitigation measures to reduce or offset GHG emissions that are not already required by law or proposed by the operator. Climate impacts are one of many factors that are considered in the NEPA analysis to evaluate the significance of a proposed action and the BLM's exercise of its discretion in deciding leasing actions.
Western Environmental Law Center et al.	WELC-28	The Draft EA's Emission Comparisons Fail NEPA's "Hard Look" Standard. BLM continues to improperly frame and weigh the context and intensity factors for assessing the significance of reasonably foreseeable GHG emissions from the proposed lease sales and their cumulative climate impacts.	The BLM recognizes the national and global impact potential of greenhouse gas (GHG) emissions and the ~~likewise~~ broad scope of climate change impacts related to them and has therefore prepared annual BLM Specialist Reports on Annual Greenhouse Gas Emissions and Climate Trends. These reports account for current and projected future agency wide GHG emissions related to fossil fuel actions on Public Land, national and global GHG emission trends, and potential climate impacts related to these emissions. The report is specifically referenced in and incorporated into each State Office lease sale NEPA analysis and provides the information necessary to properly assess agency wide, nationwide, and global reasonably foreseeable cumulative impacts of each State Office lease sale. At this time, there are no scientifically established standards, emissions thresholds, social cost allocations, carbon budgets, or otherwise, that can be used to inform analysis of GHG emissions and climate change with respect to determining the significance of an action for NEPA purposes. Until such time as the Department develops further tools to analyze the relative emissions impact of its activities nationwide, the BLM can analyze GHG emissions and climate impacts, and provide context and analysis for those emissions and impacts; the agency cannot determine significance for a proposed action based on GHG emissions or climate impacts alone.

Western Environmental Law Center et al.	WELC-29	BLM's Analysis of Cumulative GHG Emissions in the 2021 BLM Specialist Report Fails NEPA's "Hard Look" Standard. Neither the Draft EA nor the FONSI for the proposed lease sale clearly or properly assesses the significance of the cumulative impacts of the potential emissions of GHGs and their impact on climate change.	The BLM analysis presented in the EA and the 2021 Specialist Report is the agency's review of GHG emissions related to agency fossil fuel approvals. Comparing all potential emissions from fossil fuel approvals within BLM jurisdiction to emissions totals at state, national, and global levels represent a comprehensive review focused on the subject matter set before BLM decision makers. Given the highly complex and thus-far unclear relationship between GHG emissions from a specific location and climate effects at that or any other location, smaller scale comparisons cannot be made. The BLM also included comparisons of projected emissions to familiar GHG emission sources (passenger vehicles), alternative energy sources (a wind turbine), and acres of forest sequestration. These standard comparisons provided by EPA illustrate the level of impact expected from GHG emissions related to the lease sale. At this time, there are no scientifically established standards, emissions thresholds, social cost allocations, carbon budgets, or otherwise, that can be used to inform analysis of GHG emissions and climate change with respect to determining the significance of an action for NEPA purposes. Until such time as the Department develops further tools to analyze the relative emissions impact of its activities nationwide, the BLM can analyze GHG emissions and climate impacts, and provide context and analysis for those emissions and impacts; the agency cannot determine significance for a proposed action based on GHG emissions or climate impacts alone.
Western Environmental Law Center et al.	WELC-30	BLM Must Take a Hard Look at Methane Emissions and Waste. BLM must take a hard look at the impacts of methane, preferably in both a programmatic NEPA review, and an aggregated EIS for the proposed 2023 sales as discussed above.	EA Sections 3.2.0 and 4.3.0 analyze greenhouse gas emissions, including methane, and climate change impacts associated with the Proposed Action. EA Section 3.2.0 discusses mitigation strategies designed to reduce methane and GHGs. NEPA allows agencies to prepare an EA "on any action at any time in order to assist agency planning and decision-making" (43 CFR 1501.3; see also 43 CFR § 1508.9 [defining "environmental assessment"]). An agency need not prepare an EIS if it determines the action will not have significant effect on the human environment or where such effects may be mitigated by adoption of appropriate measures. The level of environmental

			analysis conducted by the BLM for the July 2023 Lease Sale is consistent with the purpose and requirements of NEPA.
Western Environmental Law Center et al.	WELC-31	BLM Must Take a Hard Look at Impacts to Human Health. BLM must include an analysis of reasonably foreseeable direct, indirect, and cumulative human health impacts resulting from oil and gas leasing and development.	BLM and other government agencies have regulations and policies intended to protect the environmental health and thereby avoiding or minimizing public exposures to substances or emissions with the potential to affect human health. In the EA, BLM has analyzed reasonably foreseeable direct and indirect impacts of leasing the proposed parcels, as well as cumulative impacts. The EA referred to health and safety data provided by the EPA regarding topics such as ground level ozone, particulate matter, nitrogen dioxide, carbon monoxide, lead, and sulfur dioxide. Additional data regarding the effects on public health and safety is taken from the Centers for Disease Control and Prevention (CDC) as referenced in the 2021 BLM Specialist Report on Annual Greenhouse Gas Emissions and Climate Trends. In addition, the Nevada Division of Environmental Protection (NDEP) Bureau of Air Pollution Control and Air Quality Planning (BAPC) has regulations, reporting, and permitting requirements for oil and gas operations in Nevada. The BLM currently requires all federal oil and gas development and operations in Nevada to obtain the necessary permits and follow the applicable rules and regulations set forth by the NDEP. Should the parcel be sold, a lease issued, and development proposed, BLM will be able to evaluate impacts in more detail at that time.
Western Environmental Law Center et al.	WELC-32	Cumulative Health Risks and Impacts to Social and Structural Factors Affecting Health. BLM must take a hard look not only at direct health impacts and proximity-related health impacts of oil and gas development, but also at cumulative health risks and impacts.	There are no established thresholds for NEPA analysis to contextualize the quantifiable greenhouse gas emissions or social cost of an action in terms of the action's effect on the climate, incrementally or otherwise. The BLM acknowledges that all GHGs contribute incrementally to climate change and associated health impacts and has displayed the greenhouse gas emissions and social cost of greenhouse gas in the EA in comparison to a variety of emissions sources and metrics. As of publication, there is no scientific data in the record, including scientific data submitted during the comment period for these lease sales, that would allow the BLM, in the absence of an agency carbon budget or similar standard, to evaluate the significance of the greenhouse

			gas emissions and associated cumulative health impacts from this proposed lease sale.
Western Environmental Law Center et al.	WELC-33	BLM also failed to take a hard look at the inexorable relationship between health and environmental justice.	The analysis considers the potential for adverse direct, indirect, and cumulative health impacts from the Proposed Action, including environmental justice communities. See EA Section 3.2.11. The commenter does not provide specific information that BLM has failed to consider.
Western Environmental Law Center et al.	WELC-34	BLM must also take a hard look at environmental justice—not just in relation to health, but also in its own right. As defined by the U.S. Environmental Protection Agency,"environmental justice" means "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, in the development, implementation, and enforcement of environmental laws, regulations, and policies."	The BLM analyzes potential impacts to environmental justice communities in in Section 3.2.11 and 4.3.8 in the EA. The analysis presented complies with the requirements set forth in CEQ guidance, Executive Order 12898, and BLM policy (as contained in BLM's Land Use Planning Handbook and BLM's IM 2022-059) determining whether proposed actions would have disproportionately high and adverse environmental impacts to minority, low-income, and American Indian populations of concern. The EA analysis contains sufficient information to meet the BLM's public disclosure and informed decision-making requirements and provides sufficient evidence to reach a Finding of No Significant Impact (FONSI).
Western Environmental Law Center et al.	WELC-35	BLM must analyze and disclose the reasonably foreseeable impacts to a variety of nonclimate resources from drilling on these particular leases. In particular, BLM must take a hard look at the impacts to groundwater, wildlife and other resources that will be harmed by oil and gas development resulting for its leasing decisions.	The July 2023 Lease Sale EA covers a broad range of non-climate resources potentially affected by the lease sale, including but not limited to groundwater (EA Section 3.2.2) and wildlife (3.2.4, 3.2.5, and 3.2.6).
Western Environmental Law Center et al.	WELC-36	BLM Failed to Take A Hard Look At Impacts To Groundwater From Well Construction Practices And Hydraulic Fracturing. The Draft EA violates NEPA by failing to analyze the reasonably foreseeable impacts to groundwater from drilling on the proposed lease sale.	The BLM analyzes potential impacts to groundwater quality in Section 3.2.2 and 4.3.2 of the EA. The EA analyzes the potential risk of contamination related to well development. Additionally, the Hydraulic Fracturing Technology Paper is included in the EA (Appendix F) and provides information on the potential impacts to usable water zones, potential sources of water for hydraulic fracturing, water availability in NV, geologic hazards, as well as public health and safety.
Western Environmental Law Center et al.	WELC-37	BLM has failed to fully evaluate the reasonably foreseeable impacts to big game from development on the proposed leases.	Impacts to big game species are analyzed in Section 3.2.4 of the EA. The commenter does not provide specific information that BLM has failed to consider.

			The Nevada Department of Wildlife (NDOW) reviewed all of the proposed lease parcels to assist the BLM in evaluating how future development of parcels may affect wildlife species in Nevada. The BLM also conferred with NDOW regarding wildlife population and habitat distribution when identifying the appropriate lease stipulations from the RMPs to apply for protection of wildlife.
Western Environmental Law Center et al.	WELC-38	BLM Failed to Take a Hard Look at Impacts on Listed and Unlisted Species and Failed to Consult with Fish and Wildlife Services As Required by the Endangered Species Act	Section 3.2.5 of the EA discusses how the Proposed Action would comply with threatened and endangered species management guidelines in the biological assessment for the Ely RMP and Endangered Species Act (ESA) Section 7 consultation requirements. The BLM includes a lease notice in all leases to ensure threatened and endangered species will be addressed prior to any development. The commenter does not provide specific information that BLM has failed to consider.
Western Environmental Law Center et al.	WELC-39	BLM also failed to take a hard look at impacts to other resources. For example, BLM failed to adequately analyze foreseeable impacts to cultural and heritage resources, wilderness study areas and lands with wilderness characteristics, and special status species. For special status species, BLM failed to fully evaluate the reasonably foreseeable impacts from development on the proposed leases.	The EA analysis addresses potential impacts to cultural resources in Section 3.2.1 and special status species in Section 3.2.5. Special designations, such as wilderness study areas (WSA), and lands with wilderness characteristics were dismissed from analysis in the EA due to lease parcel proximity to these resources or the lack of designations in the planning area. Additionally, table 3.1 of the EA states that none of the proposed parcels are within a designated wilderness or WSA, and the proposed parcels do not intersect any units found to possess lands with wilderness characteristics.
Western Environmental Law Center et al.	WELC-40	BLM improperly limited the context and scope of the potentially affected environment in which the proposed leasing actions, and their cumulative impacts, will occur.	The BLM provided a wide range of potential impact contexts in the 2021 Specialist Report, which was incorporated by reference into the EYDO EA. The 2021 Specialist Report presents the life-cycle representation of the federal onshore mineral estate GHG emissions relative to various local, state, national, and global emissions and impact contexts. The BLM analyzes the impacts associated with the alternatives using the best available information. At this time, there are no scientifically established standards, emissions thresholds, social cost allocations, carbon budgets, or otherwise, that can be used to inform analysis of GHG emissions and climate change with respect to determining the significance of an action for NEPA purposes. Until such time as the Department develops further tools to analyze the relative

			emissions impact of its activities nationwide, the BLM can analyze GHG emissions and climate impacts, and provide context and analysis for those emissions and impacts; the agency cannot determine significance for a proposed action based on GHG emissions or climate impacts alone.
Western Environmental Law Center et al.	WELC-41	BLM's Draft EA and FONSI do not adequately evaluate and discuss the impacts of GHG emissions and climate change on public health and safety, and we request BLM clearly address these impacts in an EIS.	The analysis considers potential GHG emissions in detail in Sections 3.2.0 and 4.3.0 of the EYDO EA. Additional information regarding the human health and safety effects of climate change can be found in the 2021 BLM Specialist Report on Annual GHG Emissions and Climate Trends, which is incorporated by reference into the EA analysis. An agency need not prepare an EIS if it determines the action will not have significant effect on the human environment or where such effects may be mitigated by adoption of appropriate measures. The level of environmental analysis conducted by the BLM for the July 2023 Lease Sale is consistent with the purpose and requirements of NEPA.
Western Environmental Law Center et al.	WELC-42	BLM's consideration of uncertainty in the Draft EA is inadequate. The 2021 BLM Specialist Report identifies countless areas of uncertainty regarding the analysis of GHGs and climate change.	The BLM provided a wide range of potential impact contexts in the 2021 Specialist Report, which was incorporated by reference into the EA. The 2021 Specialist Report presents the life-cycle representation of the federal onshore mineral estate GHG emissions relative to various local, state, national, and global emissions and impact contexts. The BLM analyzes the impacts associated with the alternatives using the best available information. At this time, there are no scientifically established standards, emissions thresholds, social cost allocations, carbon budgets, or otherwise, that can be used to inform analysis of GHG emissions and climate change with respect to determining the significance of an action for NEPA purposes. Until such time as the Department develops further tools to analyze the relative emissions impact of its activities nationwide, the BLM can analyze GHG emissions and climate impacts, and provide context and analysis for those emissions and impacts; the agency cannot determine significance for a proposed action based on GHG emissions or climate impacts alone.
Western Environmental Law Center et al.	WELC-43	BLM's Analysis of Controversy Over Impacts from GHGs is Absent.	At this time, there are no scientifically established standards, emissions thresholds, social cost allocations, carbon budgets, or otherwise, that can be used to inform analysis of GHG emissions

			and climate change with respect to determining the significance of an action for NEPA purposes. Until such time as the Department develops further tools to analyze the relative emissions impact of its activities nationwide, the BLM can analyze GHG emissions and climate impacts, and provide context and analysis for those emissions and impacts; the agency cannot determine significance for a proposed action based on GHG emissions or climate impacts alone. There is no significant scientific controversy as to whether or not anthropogenic GHGs contribute to climate change resulting in adverse impacts to the environment, which is why the BLM developed the 2021 Specialist Report on GHG Emissions and Climate Change. Climate impacts are among many factors that are considered in the NEPA analysis to evaluate the significance of a proposed action and the BLM's exercise of its discretion in deciding on leasing actions. In addition, the lease sales are distinct actions and so do not per se implicate the same intensity factors or implicate each and every one. The FONSI will include an examination of this intensity factor as it relates to all potentially affected resources, including climate change and greenhouse gases.
Western Environmental Law Center et al.	WELC-44	BLM's Analysis of the Cumulative Impacts of GHG Emissions is Absent.	The BLM has prepared multiple EISs covering the lands BLM is considering making available for competitive auction. The BLM has analyzed the GHG emissions from the Proposed Action and provided context for those emissions compared to existing federal onshore GHG emissions in the state and nationally. The BLM has included an evaluation of the climate change impacts that could result from the proposed action and incorporated by the reference the 2021 BLM Specialist Report on Annual Greenhouse Gas Emissions and Climate Trends which provides a more robust assessment of cumulative emissions, climate change impacts, and reputable climate science sources. If and when a proposed action for development is submitted, the BLM can determine appropriate mitigation measures to reduce or offset GHG emissions that are not already required by law or proposed by the operator. Climate impacts are one of many factors that are considered in the NEPA analysis to evaluate the significance of a

			proposed action and the BLM's exercise of its discretion in deciding leasing actions.
Western Environmental Law Center et al.	WELC-45	BLM also fails to adequately indicate how the lease action will violate federal or state law and policy, but there are several federal and state government laws and policies that set GHG emission reduction targets or commitments, which authorization of the proposed leases will likely threaten.	The BLM analyzes potential impacts, including cumulative impacts, from climate change and GHG in detail in the EA (see Sections 3.2.0 and 4.3.0). The BLM's mandate, as derived from various laws, including the MLA and the Federal Land Policy and Management Act of 1976 (FLPMA), as amended, is to make mineral resources, such as oil and gas, available for development as part of the BLM's multiple-use and sustained-yield mandate. See EA Section 1.7 for information regarding the BLM's requirements under MLA, FLPMA, and other statues and regulations. The BLM works in concert with other U.S. federal agencies (including EPA and DOE) to implement U.S. strategies and meet committed goals, including applicable executive and secretary's orders. The 2021 BLM Specialist Report Section 2.0 presents information related to the relationship to other laws and policies focused on orders, laws, and regulations related to GHGs and Climate Change. While the report was incorporated by reference in the lease sale EA, the BLM has included a direct citation to this information.
Western Environmental Law Center et al.	WELC-46	Leasing New Federal Fossil Fuels for Development Would Cause Unnecessary and Undue Degradation That Is Prohibited Under FLPMA.	The BLM's mandate, as derived from various laws, including the MLA and the Federal Land Policy and Management Act of 1976 (FLPMA), as amended, is to make mineral resources, such as oil and gas, available for development as part of the BLM's multiple-use and sustained-yield mandate. 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. See EA Section 1.7 for information regarding the BLM's requirements under MLA, FLPMA, and other statues and regulations.
Western Environmental Law Center et al.	WELC-47	BLM is Required by FLPMA to Take Every Opportunity to Reduce Methane Emissions from Mineral Production on Federal Lands.	The BLM's mandate, as derived from various laws, including the MLA and the Federal Land Policy and Management Act of 1976 (FLPMA), as amended, is to make mineral resources, such as oil and gas, available for development as part of the BLM's multiple-use and sustained-yield mandate. 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. See EA Section 1.7 for information regarding the BLM's requirements under MLA, FLPMA, and other statues and regulations. The analysis considers potential impacts from GHG emissions in detail in Sections 3.2.0 and 4.3.0 of the EYDO EA.
Western Environmental Law Center et al.	WELC-48	While BLM provides an analysis of the potential greenhouse gas emissions associated with this lease sale—and calculates the social cost of greenhouse gases resulting from the lease sale, which are estimated to run into the millions of dollars, Draft EA at 37—the Draft EA arbitrarily ignores an important aspect of the problem: what justification does BLM have for proceeding with the lease sale, given the enormous social and environmental costs of that sale? The Draft EA's Analysis of the costs of the lease sale is minimal and inadequate.	Estimating the economic benefits (change in social welfare) associated with oil and gas leasing is not required for NEPA. The BLM analyzes the impacts associated with the alternatives using the best available information, which is typically not monetized estimates of benefits or costs. The BLM is exercising its discretion to estimate SC-GHG to provide additional context for decision making. The proposed action is consistent with the stated Purpose and Need.
Western Environmental Law Center et al.	WELC-49	BLM Must Consult with the National Marine Fisheries Service and the U.S. Fish and Wildlife Service on the Greenhouse Gas Emissions Caused by Its Leasing Proposal.	The BLM consults with USFWS on projects that may have a physical effect on threatened and endangered species or their habitats. BLM commits to continue this long-established practice for any proposed plan of development that may result from the lease sale. To ensure threatened and endangered species will be addressed prior to any development, the BLM Nevada standard lease notices (NV-L-00-A-LN) are applied to all parcels and notify the prospective lessees that threatened, endangered, or other special status species may now or in the future be found on any parcel. The National Marine Fisheries Service (NMFS) has no jurisdiction over the proposed leasing action, as all parcels in this lease sale are onshore in the State of Nevada. Additionally, the BLM did not receive any comments or letters from the NMFS for the proposed lease sale. We refer the commenter to tThe BLM 2021 Specialist Report on Report on Annual Greenhouse Gas Emissions and Climate Trends (finding that, "[u]nlike other common air pollutants, the ecological impacts that are attributable to the GHGs are not the result of localized or even regional emissions but are entirely

			dependent on the collective behavior and emissions of the world's societies"; and noting "the lack of climate analysis tools and techniques that lend themselves to describing the physical climate or earth system responses, such as changes to sea level, average surface temperatures, or regional precipitation rates, that could be attributable to emissions associated with any single [land management] action or decision."); see also FWS, Threatened Species Status for Emperor Penguin With Section 4(d) Rule, 87 Fed. Reg. 64,700, 64,704 (Oct. 26, 2022) ("based on the best scientific data available we are unable to draw a causal link between the effects of specific GHG emissions and take of the emperor penguin in order to promulgate more specific regulations under [ESA Section] 4(d).") In sum, the BLM is complying with NEPA, the ESA and other federal statutes in implementing the Federal Land Policy and Management Act, including managing public lands in a manner that considers the policies to protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values, while applying principles of multiple use and sustained yield.
Western Environmental Law Center et al.	WELC-50	The BLM's Proposed Leasing Action Clearly Crosses the "May Affect" Threshold for Climate-Threatened Species and Requires Consultation. If the agency determines that an action may affect a species—even if the effect is small, indirect, or the result of cumulative actions—it must formally consult with the Services.	Sections 3.2.5 and 4.3.3 of the EA discuss how the Proposed Action would comply with threatened and endangered species management guidelines and Endangered Species Act (ESA) Section 7 consultation requirements. In addition, as described in 3.2.0 of the EA, the BLM continues to review the available climate science in connection with its statutory responsibilities, including under NEPA, and has found that despite advances in climate science, global climate models are unable to forecast local or regional effects on resources as a result of specific emissions. Any contribution to global climate processes from the issuance of leases is simply too remote, speculative, and undetectable to trigger ESA Section 7 consultation, given accumulated and persisting GHG already in the atmosphere, the annual volume of GHG emissions that will occur globally regardless of additional lease issuance, and projected continued climate change. Additionally, please see above response to comment WELC-49.