



July 29, 2019

Via Mail and Email

Jon Raby, Nevada State Director
Bureau of Land Management
1340 Financial Blvd.
Reno, NV 89502
nvsoweb@blm.gov

Subject: Request for State Director Review of DOI-BLM-NV-B020-2019-0020-EA West Grant Canyon Development, LLC Application for a Permit to Drill Butterfield No. 1 Oil Well

Dear State Director Raby:

The Center for Biological Diversity and Western Watersheds Project (Conservation Groups) hereby request, pursuant to 43 CFR § 3165.3(b), State Director Review of DOI-BLM-NV-B020-2019-0020-EA (Final EA) and the Bureau of Land Management's (BLM's) approval of the West Grant Canyon Development, LLC Application for a Permit to Drill (APD) Butterfield No. 1 Oil Well. Because Conservation Groups received notice of the Final EA and FONSI by way of e-planning review on 11 July 2019, and because Conservation Groups were not otherwise notified by BLM of the Final EA and FONSI, this request is timely pursuant to 43 CFR § 3165.3(b).¹

The Center for Biological Diversity (Center) is a non-profit environmental organization dedicated to the protection of native species and their habitats through science, policy, and environmental law. The Center also works to reduce greenhouse gas emissions to protect biological diversity, our environment, and public health. The Center has over one million members and activists, including those living in Nevada who have visited public lands in Nevada, including lands near the Butterfield No. 1 Oil Well. for recreational, scientific, educational, aesthetic and other pursuits and intend to continue to do so in the future. Our staff and members will be affected by BLM's approval of the APD. The Center provided substantive comments and raised significant concerns about the BLM's proposal to approve the APD, is an adversely affected party, and has the right to request State Director Review.

Western Watersheds Project (WWP) is a non-profit organization with more than 5,000 members and supporters. Our mission is to protect and restore western watersheds and wildlife through education, public policy initiatives and legal advocacy. WWP and its staff and members

¹ "Such request, including all supporting documentation, shall be filed in writing with the appropriate State Director within 20 business days of the date such notice of violation or assessment or instruction, order, or decision was received or considered to have been received and shall be filed with the appropriate State Director."

use and enjoy America's outdoors and its wildlife, cultural and natural resources for health, recreational, scientific, spiritual, educational, aesthetic, and other purposes. Our staff and members will be affected by the BLM's approval of the APD. The WWP provided substantive comments and raised significant concerns about the BLM's proposal to approve the APD, is an adversely affected party, and has the right to request State Director Review.

We request State Director Review, remand, and stay for these reasons:

1. BLM violated the National Environmental Policy Act and its implementing regulations by failing to analyze direct, indirect and cumulative greenhouse gas emissions.

The Butterfield No. 1 EA and FONSI violate NEPA by failing to quantify the direct, indirect or cumulative greenhouse gas pollution that would result from the construction and operation of the well.

Conservation Groups' comments responsive to the EA highlighted that NEPA requires BLM to consider existing, new, and revised climate science and policy as well as quantify and discuss the significance of the direct, indirect, and cumulative greenhouse gases generated by its proposed action. 40 C.F.R. §§ 1500.1 (requiring "high quality information" and "accurate scientific analysis"), 1502.16 (outlining what's required in an impacts analysis), 1508.7 (defining cumulative impacts), 1508.8 (defining direct and indirect impacts). Comments at 9. Those comments also highlighted BLM's failure to undertake such analysis in its EA; BLM carried those omissions into its final EA.

The Ninth Circuit has held that consideration of GHGs is clearly within the scope of required NEPA review. *Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1217 (9th Cir. 2008):

The impact of greenhouse gas emissions on climate change is precisely the kind of cumulative impacts analysis that NEPA requires agencies to conduct. Any given rule setting a CAFE standard might have an "individually minor" effect on the environment, but these rules are "collectively significant actions taking place over a period of time" *Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1216 (9th Cir. 2008)(quoting 40 C.F.R. § 1508.7).

Courts have ruled that federal agencies should consider indirect GHG emissions resulting from agency policy, regulatory, planning and leasing decisions. For example, agencies cannot ignore the indirect air quality and climate change impact of decisions that would open up access to coal reserves. *See Mid States Coal. For Progress v. Surface Transp. Bd.*, 345 F.3d 520, 532, 550 (8th Cir. 2003); *High Country Conservation Advocates v. U.S. Forest Serv.*, 52 F.Supp. 3d 1174, 1197-98 (D.Colo. 2014).

The Butterfield No. 1 EA and FONSI run afoul of a slew of recent cases holding that downstream greenhouse gas emissions are reasonably foreseeable indirect impacts of a federal fossil fuel action, that an agency must estimate downstream greenhouse gas emissions or explain

why it could not, and finally, that a cumulative impacts analysis must include considerations of downstream greenhouse gas emissions under NEPA. *Wilderness Workshop v. United States Bureau of Land Mgmt.*, 342 F. Supp. 3d 1145, 1155 (D. Colo. 2018); *San Juan Citizens All. v. United States Bureau of Land Mgmt.*, 326 F. Supp. 3d 1227, 1244 (D.N.M. 2018); *WildEarth Guardians v. Zinke*, 368 F. Supp. 3d 41, 73 (D.D.C. 2019); *W. Org. of Res. Councils v. U.S. Bureau of Land Mgmt.*, No. CV 16-21-GF-BMM, 2018 WL 1475470, at *13 (D. Mont. 2018); *Sierra Club v. Fed. Energy Regulatory Comm'n*, 867 F.3d 1357, 1374 (D.C. Cir. 2017); *WildEarth Guardians v. Zinke*, No. CV 17-80-BLG-SPW-TJC, 2019 WL 2404860 at *12 (D. Mont. Feb. 11, 2019); *Indigenous Env'tl. Network v. United States Dep't of State*, 347 F. Supp. 3d 561, 578-579 (D. Mont. 2018).

By failing to quantify the direct, indirect and cumulative greenhouse gas pollution that would result from well construction and operation, the Butterfield No. 1 EA and FONSI violate NEPA and its implementing regulations and should be remanded.

2. BLM violated the National Environmental Policy Act and its implementing regulations by failing to analyze direct, indirect and cumulative impacts to floodplain and seasonally-flooded playa.

As described in Conservation Groups' comments responsive to the EA, the EA dismissed multiple potential impacts to water and wildlife resources from drilling, road construction, and use and disposal of hazardous materials within the playa.

The Final EA continues BLM's unsupported conclusion. In lieu of an actual analysis of impacts to playa and species therein, it concludes that "[f]luids produced during drilling would be directed to a fenced reserve pit" and "[t]he ... well would include blow-out preventers" and "produced fluids would be directed to tanks set within a bermed area" and that, therefore, "there would be minimal potential for wildlife to encounter any hazardous materials." Final EA at 22.

This contradicts other findings of the Final EA, which state that "[o]il and gas exploration drilling may affect the environment through production of wastes that could be classified as hazardous. These include oil spills, produced waters, drill cuttings and fluids, and other hazardous materials." Final EA at 23. It goes on:

Indirect impacts would include drilling fluid or hydrocarbon spills, leakage from improperly constructed sump ponds or waste water collection systems, improperly handled brine water from drilling and accumulations of solid waste, which could impact water quality or contaminate soils. Hydrocarbon spills could include hydraulic fluid, gasoline, oil, or grease from vehicles, generators and exploration drill rigs. Brine water from exploration drilling, if improperly disposed, could raise the pH and/or salinity of existing surface waters to unacceptable levels. Generation of nonhazardous solid waste could include small amounts of trash, drill cuttings, wastewater, bentonite and cement generated during drilling operations.

Id.

That conclusion also contradicts multiple findings in the BLM's own June 2017 Leasing EA, including, as earlier discussed and cited in Conservation Groups' EA comments (at 3-8);

- For parcels within the 100-year floodplain, “Additional site-specific analysis to identify potential flood plain complications would be required prior to drilling in parcels that meet this designation.” EA at 42.
- For parcels, such as lease N-095552/Parcel 106 that “largely or entirely overlay a combination of water bodies, wetlands, perennial or ephemeral streams, floodplains, and/or ephemerally-flooded playas . . . it would be difficult or impossible to avoid impacts to these hydrological features and their associated plant communities and wildlife habitats. Leasing these parcels would risk violation of Executive Orders 11988 and 11990 and/or the Clean Water Act.” EA at 42.
- BLM concluded that it was unnecessary to defer floodplain and playa parcels, including the instant lease parcel, because all such lands would be protected by a Water Resources Stipulation: “All of the proposed future stipulations that would protect wetlands, riparian zones, seeps/springs, floodplains and/or playas would be combined into one Water Resources stipulation that provides a similar degree of protection. This Water Resources stipulation also addresses ephemeral channels. The stipulations are Controlled Surface Use (CSU) rather than No Surface Occupancy (NSO); however, the controls are designed to protect water resources and prevent erosion, with appropriate avoidance buffers, engineering controls, and mitigation, for resources wherever they may occur within a parcel. Application of the stipulation would generally protect water resources from all impacts.” EA at 45. As discussed below, however, despite this finding, the Water Resources Stipulations was not applied to Parcel 106/Lease N-065552.
- “[O]il and gas development could have unknown effects on the quality and quantity of water in parcels where important wetland, springs, and playas occur. Riparian vegetation communities are fragile environments that could be impacted by disturbances to the timing and amount of water capture, water storage, and water release.” EA at 48.
- “Far from major rivers or lakes, playas are often the only water available to wildlife in the desert; pronghorn and other animals may gather there to drink.” EA at 54.
- “The Assessment Area also includes extensive playas, which if consistently flooded during the breeding season may provide breeding habitat for snowy plover, a BLM Nevada Sensitive species; and even if only occasionally flooded, would then provide feeding and stopover habitat for migrating shorebirds and waterfowl.” EA at 56.
- Several parcels, including parcel 106, “are largely or entirely composed of wetland-riparian areas and playas that many wildlife species depend on. Oil and gas development without proper engineering controls, BMPs, and mitigation could cause disproportionate and, in some cases, potentially irreversible habitat loss to these dependent species.” EA at 57.
- “Besides redirecting surface water, building access roads within wetland areas and playas could degrade the habitat for some aquatic species in other ways. Access roads can cause

fragmentation of habitat, introduction of invasive species into highly diverse wetland and riparian areas, and increased erosional processes due to removal of vegetation. This could impact nutrient levels, temperature, and pH levels of aquatic habitat; and could indirectly impact food sources for wildlife due to changes in vegetation. If certain thresholds of degradation are crossed within fragile wetland habitats, mitigation would require great input to achieve pre-disturbance conditions of wildlife habitat.” EA at 58-59.

The Leasing EA determined generally that impacts from hazardous materials would be insignificant, but that “An exception would be parcels containing extensive wetlands, springs/seeps, riparian areas, floodplains and seasonally flooded playas. Where water is present, contaminants from any accidental spillage are easily brought into solution and spread throughout the system Impacts of any hazardous waste spills in these rare and sensitive areas would be potentially substantial and difficult to mitigate.” EA at 96.

BLM’s Final EA, in failing to conduct any meaningful analysis of the site-specific effects of development within the playa, 100-year floodplain, or wildlife therein, both violates NEPA’s requirements for a hard look at reasonably foreseeable impacts; it contradicts, without reasoned discussion, the prior conclusions of the Leasing EA – other conflicting conclusions within the Final EA itself – with regard to impacts to playas, floodplains, and wildlife therein. Further, because authorization of the Butterfield Well will result in significant environmental impacts never previously analyzed in the Leasing EA, BLM must prepare an Environmental Impact Statement prior to authorizing development. *See Center for Biological Diversity v. U.S. Bureau of Land Management*, No. 3:17-cv-553 (D. Nev. Jan. 15, 0219), Order on Motions for Summary Judgment at 24 (“If BLM decides to grant an APD at that stage, it will be required to prepare an EIS (and comply with any other NEPA procedures) because it no longer has the authority to prevent the lessee from engaging in surface disturbing activity.”)

3. Conclusion

Based on the reasons set out above, the Decision Record/FONSI and Final EA were issued without appropriate compliance with NEPA and the Administrative Procedure Act (APA). Accordingly, we ask that you issue an order revoking the Final EA and Decision Record/FONSI and remanding the decision with instructions that both be revised to comply with the requirements of these laws. In the meantime, we request that you impose a stay on all activities related to this project and revoke the “full force and effect” implications of the Decision Record until such time as the required environmental analyses are lawfully completed.

Thank you for your consideration of our Request for State Director Review. We respectfully request notification of any future action relating to this Project.

Respectfully submitted,

/S/

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Attachments:

- (1) Conservation Groups' Comments
- (2) Final Environmental Assessment
- (3) Finding of No Significant Impact
- (4) Decision Record
- (5) June 2017 Leasing EA



May 17, 2019

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Via electronic mail to

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Re: Comments of the Center for Biological Diversity, Sierra Club, and Western Watersheds Project on the Bureau of Land Management's Environmental Assessment for West Grant Canyon Development LLC's Application for Permit to Drill Butterfield No. 1 Oil Well, DOI-BLM-NV-B020-2019-0020-EA

Ms. Jennings:

Please accept the following comments on Environmental Assessment ("EA") No. DOI-BLM-NV-B020-2019-0020 on behalf of the Center for Biological Diversity, Sierra Club, and Western Watersheds Project. We strongly object to the Bureau of Land Management's decision to authorize surface-disturbing oil and gas development within the environmentally-sensitive area of the Railroad Valley playa. Furthermore, as set forth below, there are serious deficiencies in the Environmental Assessment, including the failure to evaluate significant environmental consequences previously deferred from analysis in the BLM's Environmental Assessment for the affected oil and gas lease parcel. In particular, the proposed drilling permit fails to incorporate water resource mitigation measures previously determined by BLM to be necessary to protect water and wildlife resources, including seasonally-flooded habitats such as the project site. The EA also improperly segments the BLM's NEPA analysis by deferring analysis of any impacts from hydraulic fracturing to some unspecified future NEPA process, and fails to include any analysis whatsoever of indirect and cumulative effects on air quality and climate change. The EA also fails to provide any evidence that BLM has complied with its obligation to consult with the U.S. Fish and Wildlife Service regarding the threatened Railroad Valley springfish. The proposed Application to Drill must be denied until such time as the BLM can both complete an adequate environmental analysis, and incorporate necessary conditions to protect the seasonally-flooded habitat.

Although the Butterfield No. 1 APD EA fails to disclose the fact, fluid mineral lease parcel in question, No. N-095552, located at Section 21, T. 7 N., R. 56 E., Mount Diablo Meridian (M.D.M.), was previously the subject of a BLM NEPA analysis in **Environmental Assessment No. DOI-BLM-NV-B020-2017-0002-EA June 2017 Competitive Oil and Gas Lease Sale**, where it was proposed for lease as Parcel No. NV-17-06-106.¹ That leasing EA acknowledged the potential for numerous significant impacts to water resources and wildlife habitat from development on seasonally-flooded playas, but deferred site-specific analysis to the APD stage. The Butterfield No. 1 APD EA fails to complete those required analyses, and fails, without explanation, to include water resource protection measures previously determined necessary for protection of rare and sensitive playa habitats.

I. BLM Has Failed to Provide Adequate Notice and Opportunity to Comment

NEPA regulations require federal agencies to encourage and facilitate public involvement “to the fullest extent possible,” 40 C.F.R. § 1500.2, and identify public scrutiny as an “essential” part of the NEPA process, *id.* § 1500.1(b). *See also id.* § 1501.4(b) (Agencies must “involve . . . the public, to the extent practicable”); *id.* § 1506.6 (“Agencies shall: . . . (a) Make diligent efforts to involve the public in preparing and implementing their NEPA procedures”). They also provide that “NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken.” 40 C.F.R. § 1500.1(b). FLPMA section 309(e) similarly requires BLM to “give . . . the public adequate notice and an opportunity to comment upon . . . and to participate in . . . the management of[] the public lands.” 43 U.S.C. § 1739(e). A fourteen-day public availability and comment period provides insufficient time for the public to participate meaningfully in BLM decisions, such as the proposed APD authorization, that may involve complex and technical issues of hydrology and hydrogeology. We hereby object to BLM’s abbreviated comment period on the Butterfield No. 1 EA, and request the right to submit supplemental information as it becomes available.

II. EA fails to consider impacts to floodplain and seasonally-flooded playa

The Butterfield No. 1 EA acknowledges that the lease parcel, and proposed well pad site (as well as large portions of the proposed access road) are located entirely within the seasonally-flooded Railroad Valley playa, as well as a 100-year floodplain.² The EA, however, cursorily dismisses the multiple potential impacts to water and wildlife resources from drilling, road construction, and use and disposal of hazardous materials within the playa, stating “The proposed action would have little potential for affecting water quantity and quality to ground water. The potential for surface to groundwater contamination will be reduced through spill

¹ Compare Butterfield No. 1 APD EA at 3 (“Section 21, T. 7 N., R. 56 E., Mount Diablo Meridian (M.D.M.)”) with BLM Nevada June 2017 Leasing EA at 132 (defining Parcel NV-17-06-106 as “T.0070N R.0560E, 21 MDM, NV, Sec. 021 ALL”).

² Butterfield No. 1 APD EA at 6, 176.

prevention plans, general housekeeping, and collection of drilling fluids. No surface water exists within 3 miles of the proposed well location.” EA at 19.

The EA’s unsupported conclusion of “little potential” to affect groundwater, surface water, or playa-dependent wildlife contradicts multiple findings in the BLM’s own June 2017 Leasing EA, including:

- For parcels within the 100-year floodplain, “Additional site-specific analysis to identify potential flood plain complications would be required prior to drilling in parcels that meet this designation.”³
- For parcels, such as lease N-095552/Parcel 106 that “largely or entirely overlay a combination of water bodies, wetlands, perennial or ephemeral streams, floodplains, and/or ephemerally-flooded playas . . . it would be difficult or impossible to avoid impacts to these hydrological features and their associated plant communities and wildlife habitats. Leasing these parcels would risk violation of Executive Orders 11988 and 11990 and/or the Clean Water Act.”⁴
- BLM concluded that it was unnecessary to defer floodplain and playa parcels, including the instant lease parcel, because all such lands would be protected by a Water Resources Stipulation: “All of the proposed future stipulations that would protect wetlands, riparian zones, seeps/springs, floodplains and/or playas would be combined into one Water Resources stipulation that provides a similar degree of protection. This Water Resources stipulation also addresses ephemeral channels. The stipulations are Controlled Surface Use (CSU) rather than No Surface Occupancy (NSO); however, the controls are designed to protect water resources and prevent erosion, with appropriate avoidance buffers, engineering controls, and mitigation, for resources wherever they may occur within a parcel. Application of the stipulation would generally protect water resources from all impacts.”⁵ As discussed below, however, despite this finding, the Water Resources Stipulations was not applied to Parcel 106/Lease N-065552.
- “[O]il and gas development could have unknown effects on the quality and quantity of water in parcels where important wetland, springs, and playas occur. Riparian vegetation communities are fragile environments that could be impacted by disturbances to the timing and amount of water capture, water storage, and water release.”⁶

³ June 2017 Leasing EA at 42.

⁴ *Id.*

⁵ *Id.* at 45.

⁶ *Id.* at 48.

- “Far from major rivers or lakes, playas are often the only water available to wildlife in the desert; pronghorn and other animals may gather there to drink.”⁷
- “The Assessment Area also includes extensive playas, which if consistently flooded during the breeding season may provide breeding habitat for snowy plover, a BLM Nevada Sensitive species; and even if only occasionally flooded, would then provide feeding and stopover habitat for migrating shorebirds and waterfowl.”⁸
- Several parcels, including parcel 106, “are largely or entirely composed of wetland-riparian areas and playas that many wildlife species depend on. Oil and gas development without proper engineering controls, BMPs, and mitigation could cause disproportionate and, in some cases, potentially irreversible habitat loss to these dependent species.”⁹
- “Besides redirecting surface water, building access roads within wetland areas and playas could degrade the habitat for some aquatic species in other ways. Access roads can cause fragmentation of habitat, introduction of invasive species into highly diverse wetland and riparian areas, and increased erosional processes due to removal of vegetation. This could impact nutrient levels, temperature, and pH levels of aquatic habitat; and could indirectly impact food sources for wildlife due to changes in vegetation. If certain thresholds of degradation are crossed within fragile wetland habitats, mitigation would require great input to achieve pre-disturbance conditions of wildlife habitat.”¹⁰
- The Leasing EA determined generally that impacts from hazardous materials would be insignificant, but that “An exception would be parcels containing extensive wetlands, springs/seeps, riparian areas, floodplains and seasonally flooded playas. Where water is present, contaminants from any accidental spillage are easily brought into solution and spread throughout the system . . . Impacts of any hazardous waste spills in these rare and sensitive areas would be potentially substantial and difficult to mitigate.”¹¹

BLM’s drilling EA, in failing to conduct any meaningful analysis of the site-specific effects of development within the playa and 100-year floodplain, both violates NEPA’s requirements for a hard look at reasonably foreseeable impacts, and contradicts, without reasoned discussion, the prior conclusions of the Leasing EA with regard to impacts to playas and floodplains.

III. EA fails to incorporate water protection measures relied upon in leasing EA

⁷ *Id.* at 54.

⁸ *Id.* at 56.

⁹ *Id.* at 57.

¹⁰ *Id.* at 58-59.

¹¹ *Id.* at 96.

In its initial Draft EA for the June 2017 Battle Mountain oil and gas lease sale, the BLM proposed the deferral of parcels, including Parcel 106, consisting entirely of playa, wetland, and/or floodplain until such time as new stipulations could be incorporated into the Tonopah RMP to address and mitigate impacts to water resources. In its Revised EA, the BLM rejected that alternative but adopted instead a Resource Protection Alternative, requiring, among other measures, inclusion of a Water Resources Stipulation requiring a 500' no surface occupancy buffer between water resources and drilling activity. June 2017 Leasing EA at 170, Stipulation NV-B-10-B-CSU ("Controlled Surface Use (CSU) stipulation will be applied to oil and gas leases and land use authorizations to avoid impacts to the following areas: 1) identified 100-year flood plains, and playas; 2) areas within 500 feet of perennial waters, springs, wells, and wetland/riparian areas; and 3) areas within 100 feet of the inner gorge of ephemeral channels. Surface disturbing activities may require special engineering design, construction and implementation measures, potentially including relocation of operations more than 200 meters to protect water resources.") Based on this stipulation, the BLM concluded that the exclusion of drilling operations from playas and floodplains would adequately protect surface and groundwater resources otherwise at risk: "All of the proposed future stipulations that would protect wetlands, riparian zones, seeps/springs, floodplains and/or playas would be combined into one Water Resources stipulation that provides a similar degree of protection. . . . the controls are designed to protect water resources and prevent erosion, with appropriate avoidance buffers, engineering controls, and mitigation, for resources wherever they may occur within a parcel. Application of the stipulation would generally protect water resources from all impacts." *Id.* at 45.

The June 2017 Leasing EA identified Parcel 106, within the Railroad Valley Playa, as subject to deferral under the partial deferral (and additional stipulations) based on the presence of wetlands, 100-year floodplains, and playa. June 2017 EA at 160. Despite the clear presence of playa and floodplain, the final leasing action, however, failed to attach the Water Resources Stipulation of the Additional Resource Protection Alternative to Parcel 106. June 2017 Leasing EA at 173. Thus, the lease at issue in this APD EA has, improperly, no Water Resources Stipulation barring surface occupancy of the playa. APD EA at 6. The APD EA asserts, incorrectly, that "No lease-specific stipulations were identified at the time of the parcel's sale." EA at 6. Lease-specific stipulations were identified, *see* June 2017 Leasing EA at 160, but not attached. There is no reasonably disputing the fact that the parcel lies entirely within the playa and, under the terms of the leasing EA, a Water Resources Stipulation should have been attached.

Because BLM has failed, without explanation, to attach the stipulation it previously determined necessary, the agency should exercise its authority to revoke the lease as improperly issued. Alternatively, at a minimum, it should either utilize its authority to regulate lease occupancy, 43 C.F.R. § 3101.1-2 to impose Conditions of Approval consistent with the Water Resources Stipulation, or decline to issue the APD under its admitted authority to "deny the APD

if the proposal would violate lease stipulations or applicable laws or regulations, or result in undue or unnecessary environmental degradation,” EA at 13.

IV. EA fails to disclose or consider effects from water use, contamination, and disposal

A deep carbonate aquifer that underlies the majority of the Great Basin flows underneath the proposed drilling location, generally trending from northeast to southwest. This aquifer is largely comprised of “fossil water,” which accumulated underground during the Pleistocene and continues to flow and discharge to this day. Above the carbonate aquifer are basin-fill or alluvial aquifers, which move precipitation from the region’s numerous mountain ranges to the valley floors. As groundwater flow meets resistant layers of rock, both systems give rise to surface expressions of groundwater, generally in the form of springs and wetlands. These surface water expressions are the most vital resources in the desert, supporting the vast majority of Nevada’s robust biodiversity. In particular, the shallow alluvial aquifer can communicate directly with surface waters such as the seasonally-flooded area around the proposed well, pad, and road site.

In light of the critical importance of groundwater and surface water resources, it is incumbent upon the BLM to include a rigorous analysis of potential impacts to these resources, and the cascading effects such impacts would have on the region’s wildlife and biodiversity. Instead, what BLM offers in the EA is a minimization of potential impacts, and a delay on any actual analysis until an unspecified future analysis of hydraulic fracturing and water disposal activities. Impacts to the quality and quantity of groundwater from the entirety of the proposed action, including both hydraulic fracturing and water disposal activities and thus to the surface expression of those waters, are reasonably foreseeable and must be analyzed.

The EA fails to even mention or acknowledge the carbonate aquifer. Indeed BLM ignores its existence, as it states the “bottom of the hole” in the well would be “several thousand feet below potable water aquifers.” EA at 19. Since the EA fails to adequately describe the affected environment for the hydrogeological setting of Railroad Valley, the public has no way of knowing if the well’s production zone would be above or below the carbonate aquifer. According to a USGS report, the central part of Railroad Valley, presumably underneath the playa, contains unconsolidated basin-fill sediments up to 7,500 feet in depth.¹² The carbonate rocks begin in the central part of the valley at approximately -2,500 feet below average mean sea level. Since the APD EA states that the well itself would be “drilled to an approximate depth of 8,000 feet,” (EA at 10) the relationship between the well’s production zone and the deep carbonate aquifer is unclear.

¹² United States Geological Survey. 1998. “Aquifer Systems in the Great Basin Region of Nevada, Utah, and Adjacent States – Summary Report.” Harrill, J.R. & Prudic, D.E. USGS Professional Paper 1409-A. <https://pubs.usgs.gov/pp/1409a/report.pdf>

Drilling or utilizing hydraulic fracturing above or within the carbonate aquifer is highly problematic. Railroad Valley is a regional carbonate groundwater flow sink¹³, collecting and discharging interbasin flow from a 7,200 square mile area. Fracturing in Railroad Valley brings this deep carbonate flow to the surface in aforementioned springs and wetlands. Well casing failures or other contamination vectors within or above the deep carbonate aquifer could allow contaminants into the carbonate water, which would then flow upward through faults and contaminate surface water resources.

The EA discloses only that initial drilling will utilize approximately 500,000 gallons (1.53 acre/feet) of water from the alluvial aquifer. EA at 11. It defers to some unspecified future date and process, however, any analysis of the foreseeable water use and disposal consequences of hydraulic fracturing and oil and gas production. EA at 12 (“If formation water is encountered, an appropriate application process would be conducted for water disposal. “), App. A. at 5 (“If after drilling of the well is completed hydraulic fracturing is proposed, prior approval and further NEPA analysis will be needed.”) The EA fails entirely to disclose the fact that hydraulic fracturing operations may both result in substantially greater demands for groundwater as well as additional risks of creating communication between surface waters, shallow aquifers, and the carbonate aquifer that feeds many of the Railroad Valley’s unique springs and wetlands.

An EPA study found that the volumes of water needed to successfully fracture rock to open up oil and gas resources vary widely: statewide median quantities utilized fell between 76,818 gallons (0.23 acre-feet) per well in California to 5,259,965 gallons (15.9 acre-feet) per well.¹⁴ Without citations, the EA’s own fracking “white paper” puts forward ranges of 50,000 to 300,000 gallons (0.15 to 0.91 acre-feet) for shallow vertical wells, and 800,000 to 10,000,000 gallons (2.4 to 30.3 acre-feet) for deep tight sand gas horizontal or directionally drilled wells.¹⁵

As BLM’s own hydraulic fracturing “White Paper,” appended to its June 2017 Leasing EA further notes:

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.¹⁶

¹³ *Id.*

¹⁴ U.S. EPA, Hydraulic Fracturing for Oil and Gas: Impacts from the Hydraulic Fracturing Water Cycle on Drinking Water Resources in the United States (Final Report). U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-16/236F (2016).

¹⁵ June 2017 Leasing EA at 185.

¹⁶ June 2017 Leasing EA at 189.

The EA fails completely to discuss or analyze the risks to surface water and ground water, including the Railroad Valley's alluvial and carbonate aquifers, from multiple risks associated with the construction, drilling, operation, road construction and potential hydraulic fracturing and produced water disposal activities associated with the proposed well.

V. EA improperly segments decision to avoid disclosing impacts from hydraulic fracturing

To avoid the improperly segmented analysis of related actions, NEPA requires BLM to consider multiple proposed actions in a single EIS if they are "cumulative actions" or "similar actions." 40 C.F.R. § 1508.25. Cumulative actions are those that "when viewed with other proposed actions have cumulatively significant impacts and should therefore be discussed in the same statement." *Id.* § 1508.25(a)(2). Similar actions are those that, "when viewed with other reasonably foreseeable or proposed agency actions, have similarities that provide a basis for evaluating their environmental consequences together, such as common timing or geography." *Id.* § 1508.25(a)(3).

The Butterfield No. 1 APD EA contains absolutely no disclosure, discussion, or analysis of potential impacts to surface water, groundwater, or wildlife from hydraulic fracturing activities on the proposed well. Instead, the APD contains, without explanation, a Condition of Approval stating that "[i]f after drilling of the well is completed hydraulic fracturing is proposed, prior approval and further NEPA analysis will be needed." Hydraulic fracturing is both a readily foreseeable consequence of oil and gas exploration and production, and, since the repeal of BLM's Hydraulic Fracturing Rule, 82 Fed. Reg. 61,924 (Dec. 29, 2017), not subject to pre-fracking approval by BLM. Deferring any analysis of impacts from hydraulic fracturing to an unspecified future analysis violates both BLM's obligation to consider all reasonably foreseeable indirect impacts at the earliest possible time, and the rule against segmenting NEPA review to avoid consideration of all foreseeable impacts of a proposed action.¹⁷ Because hydraulic fracturing is impossible without drilling the well, and because modern oil exploration is highly unlikely to occur without at least some use of hydraulic fracturing techniques,¹⁸ APD approval and approval of hydraulic fracturing constitute "interdependent parts of a larger action and depend on the larger action for their justification," 40 C.F.R. § 1508.25(a)(iii).

The EA similarly engages in improper segmentation of discussion of produced water disposal, limiting its entire analysis to the statement that "[i]f formation water is encountered, an appropriate application process would be conducted for water disposal." EA at 12. Given the existence of multiple prior exploration wells in the area, EA at 22, including seven actively producing wells, EA at 28, there is surely data available for BLM to estimate produced water yields and composition from targeted oil-bearing formations, and to disclose the quality and quantity of that produced water and determine reasonable conditions of approval for its disposal.

¹⁷ See 40 C.F.R. § 1508.25; *Thomas v. Peterson*, 753 F.2d 754, 756-61 (9th Cir. 1985).

¹⁸ Bureau of Land Management, Hydraulic Fracturing Rule, 80 Fed.Reg. 16,128, 16,131 (March 26, 2015).

VI. EA contains no disclosure or analysis of indirect & cumulative climate impacts

BLM must also consider recent climate science as well as the indirect and cumulative effects greenhouse gas emissions that will result from the approval of these APDs and other past, present, and reasonably foreseeable federal and non—federal California oil and gas production decisions. NEPA specifically requires BLM to consider existing, new, and revised climate science and policy as well as quantify and discuss the significance of the direct, indirect, and cumulative greenhouse gases generated by its proposed action. 40 C.F.R. §§ 1500.1 (requiring “high quality information” and “accurate scientific analysis”), 1502.16 (outlining what’s required in an impacts analysis), 1508.7 (defining cumulative impacts), 1508.8 (defining direct and indirect impacts).

Court decisions clearly establish that NEPA mandates consideration of the indirect and cumulative climate impacts of BLM fossil fuel production decisions, including at the permitting stage. *Citizens for a Healthy Community v. BLM*, No. 1:17-cv-2519, 2019 WL 1382785 (D. Colo. March 27, 2019) (holding that “Defendants acted in an arbitrary and capricious manner and violated NEPA by not taking a hard look at the foreseeable indirect effects resulting from the combustion of oil and gas in the EIS and EA. Defendants must quantify and reanalyze the foreseeable indirect effects the emissions.”) *See also, WildEarth Guardians v. Zinke*, No. CV 16-1724 (RC), 2019 WL 1273181 (D.D.C. Mar. 19, 2019). (invalidating nine BLM NEPA analyses in support of oil and gas lease sales because “BLM did not take a hard look at drilling-related and downstream [greenhouse gas] emissions from the leased parcels and, it failed to sufficiently compare those emissions to regional and national emissions.”) *San Juan Citizens All. v. U.S. Bureau of Land Mgmt.*, 326 F.Supp. 3d 1227, 1242–43 (D.N.M. 2018) (collecting cases); *Western Org. of Res. Councils v. U.S. Bureau of Land Mgmt.*, CV 16-21-GF-BMM, 2018 WL 1475470, (D. Mont. Mar. 26, 2018) (requiring consideration of climate change the RMP stage); *Sierra Club v. Fed. Energy Regulatory Comm’n*, 867 F.3d 1357, 1374 (D.C. Cir. 2017) (requiring quantification of indirect greenhouse gas emissions); *Center for Biological Diversity v. Nat’l Highway Traffic. Admin.*, 538 F.3d 1172, 1215 (9th Cir. 2008) (requiring assessment of the cumulative impacts of climate change); *San Juan Citizens All. v. United States Bureau of Land Mgmt.*, 326 F. Supp. 3d 1227, 1244 (D.N.M. 2018) (requiring assessment of greenhouse gas emissions at the lease sale stage).

Although the individual indirect emissions from this single well are limited, BLM has never quantified and analyzed these emissions, either in its 1997 Tonopah Resource Management Plan nor in its Environmental Assessment for the June 2017 Competitive Oil and Gas Lease Sale.¹⁹ BLM cannot rely on its failure to consider climate impacts at earlier stages of the oil and gas planning, leasing and development process to now argue that it has no obligation to consider them at the final. NEPA mandates that “[a]gencies shall integrate the NEPA process with other planning at the earliest possible time to insure that planning and decisions reflect environmental values . . .” 40 C.F.R. § 1501.2.

¹⁹ *See* June 2017 Leasing EA at 30 (“Prior to authorizing specific proposed projects on the lease parcels, quantitative computer modeling using project specific emission factors and planned development parameters (including specific emission source locations) may be conducted to adequately analyze direct and indirect potential air quality impacts. Inconducting subsequent project-specific analysis.”).

VII. EA fails to consider impacts to BLM-designated sensitive species, including the snowy plover and an undescribed species of boreal toad

Seasonally-flooded playas provide important seasonal habitats to the snowy plover, a BLM-sensitive species. In its June 2017 leasing EA, BLM acknowledged that ““The Assessment Area also includes extensive playas, which if consistently flooded during the breeding season may provide breeding habitat for snowy plover, a BLM Nevada Sensitive species; and even if only occasionally flooded, would then provide feeding and stopover habitat for migrating shorebirds and waterfowl.” The APD EA acknowledges the presence of shorebirds including the sensitive snowy plover, but arbitrarily dismisses the potential for impacts and does not adopt any Conditions of Approval to mitigate those impacts: “Shorebirds, wading birds, and waterfowl species would be expected in ephemeral wetlands near the project area only when adequate water for foraging is seasonally present (normally winter into early spring). The project area itself does not provide habitat for shorebirds, wading birds or waterfowl.” EA at 21. This failure violates both NEPA and BLM’s sensitive species policy.

The boreal toad (*Anaxyrus boreas*) is a BLM Nevada Sensitive Species. A population of these toads lives at Lockes Ranch in Railroad Valley. Using both genetic and morphological analyses, researchers from University of Nevada-Reno have identified this population as a distinct species: the Railroad Valley toad (*Anaxyrus nevadensis*).²⁰ While the final description of the new species is awaiting publication, it is still considered part of the boreal toad species complex, and thus is a BLM Nevada Sensitive Species. The Railroad Valley toad’s habitat is completely reliant on consistent spring discharge from the carbonate aquifer at Lockes Ranch. As described above and below, the proposed action presents the threat of contamination to the carbonate aquifer and its pathways which the toad relies upon. The EA fails to acknowledge the presence of this BLM Nevada Sensitive Species, and fails to disclose or analyze potential impacts of the proposed action on this sensitive and narrowly endemic species.

While the EA acknowledges the presence of the BLM Nevada Sensitive Species the Railroad Valley tui chub (*Siphaletes bicolor ssp. 7*), it does not disclose or analyze any potential impacts to the fish, despite its presence at Flowing Well #7, just three miles from the proposed drill site. Impacts could include contamination to shallow alluvial aquifers and/or deep carbonate aquifers which could contaminate Flowing Well #7 or other surface water sources where the tui chub resides.

It is indisputable that previous oil and gas operations in Railroad Valley have had an impact on this fish. For example, in an APD filed for a the Soda Spring proposed well in Railroad

²⁰ Gordon, M.R., Simandle, E.T., Tracy, C.R. 2017. Unpublished thesis. “Two New Cryptic Endemic Toads of *Bufo* Discovered in Central Nevada, Western United States.” A manuscript for peer-reviewed publication of this discovery has been submitted, reviewed, and is final pre-publication edits as of May 2019, per personal communication with the authors. Enclosed here as Attachment A. See also University of Nevada-Reno press release at: <https://www.unr.edu/nevada-today/news/2017/new-toad-species-discovered>

Valley in 2016, the project proponent proposed utilizing surface flow from the adjacent Butterfield Spring for their drilling operations. Butterfield Spring is one of the native habitats for the tui chub. The proponent was to utilize up to 12,600 gallons of water every 24 hours, or some 8.75 gallons per minute, a substantial amount of flow. The fish was protected by sealing the intake hose with ¼” grating, which while potentially averting direct mortality does not compensate for the degradation of habitat due to dewatering. In sum: the tui chub has already experienced impacts from oil and gas operations in Railroad Valley.

BLM Manual 6840 requires the agency “[t]o initiate proactive conservation measures that reduce or eliminate threats to Bureau sensitive species to minimize the likelihood of and need for listing of these species under the ESA.”²¹ Manual 6840 further states that it is the BLM’s Policy to promote the “conservation and to minimize the likelihood and need for listing” Bureau sensitive species.²² BLM leasing EA and proposed conditions of approval fail to meet this affirmative obligation to initiate conservation measures. The migratory bird Lease Notice, No. B-6-C-LN, provides timing limitations only for breeding seasons, March 1 through July 31. Under its sensitive species policy, BLM must consider and adopt reasonable measures – including limiting surface occupancy of playa habitats – to ensure the conservation of the snowy plover during winter inundations. As for the toad, given its highly restricted distribution and sensitivity to perturbations in the groundwater flow system, failure to protect the carbonate aquifer and flow system from contamination due to drilling and fracking could potentially necessitate the likelihood of and need for listing, in violation of the aforementioned BLM Manual 6840.

VIII. BLM must consult with FWS regarding impacts to Railroad Valley springfish

The BLM’s failure to conduct site-specific consultation with the Fish and Wildlife Service regarding the proposed drilling activity violates Section 7 of the Endangered Species Act. BLM, without any reasoned explanation or hydrologic analysis, dismisses any potential impacts to the springfish and its habitat based on indirect and cumulative effects of drilling.

The Railroad Valley springfish is known to survive in only two locations in the Railroad Valley – the Lockes Ranch spring complex, and the spring complex located on the Duckwater Reservation. Both locations contain designated critical habitat, and while the basin they lie within (173B) is not designated by the Nevada State Engineer, there are significant groundwater withdrawals currently taking place. The localized effects of pumping need to be examined with close scrutiny for impacts to critical habitat adjacent to the proposed drilling location. Even the slightest perturbation in the aquifers that give rise to the Lockes Ranch and Duckwater spring

²¹ *Id.* at § .02 (emphasis added).

²² *Id.* at § .06.

complexes poses an existential threat to the fish, and will result in adverse modification of its critical habitat.²³

The BLM offers no evidence of consultation with the Fish and Wildlife Service, and dismisses potential hydrologic impacts to the Railroad Valley springfish based solely on the assertion that “[a]pproximately 11 oil exploration wells have been drilled within 2 miles of the proposed well as there has been no measureable effect on the quality or quantity of water at *Railroad Valley springfish* sites.” EA at 22. This conclusory statement both ignores the fact that the majority of those wells have been plugged and abandoned without production, EA at 28, and, more importantly, does not substitute for informed consultation with the Fish and Wildlife Service to evaluate potential hydrogeologic pathways for water quality or quantity impacts on the springfish’s few remaining habitats.

The EA reveals the presence of Railroad Valley springfish habitat that may be affected by hydrologic impacts of oil and gas drilling, but fails to provide any meaningful information regarding potential effects. BLM must not only evaluate the indirect and cumulative effects on special status species under NEPA, it must also consult with the Fish and Wildlife Service under Section 7 regarding the effects of oil and gas development and water use, including hydraulic fracturing and water disposal, on the Railroad Valley springfish.

The Fish and Wildlife Service has previously expressed concerns with leasing and oil and gas development in hydrographic basins which harbor listed endemic species, due to the complex and interconnected nature of the carbonate and alluvial aquifer systems and the multiple potential pathways for contamination and drawdown of the spring sources upon which those species, including the Railroad Valley springfish, rely.²⁴ Indeed in a 2014 memorandum, FWS recommended completely closing basin 173B (Northern Railroad Valley) to oil and gas leasing and development altogether, in order to protect the Railroad Valley springfish.²⁵

Congress enacted the Endangered Species Act (ESA) in 1973 to provide for the conservation of endangered and threatened fish, wildlife, plants and their natural habitats. 16 U.S.C § 1531, 1532. The ESA imposes substantive and procedural obligations on all federal agencies with regard to listed and proposed species and their critical habitats. See *id.* §§ 1536(a)(1), (a)(2) and (a)(4) and § 1538(a); 50 C.F.R. § 402. Under section 7 of the ESA, federal agencies must “insure that any action authorized, funded, or carried out by such agency ... is not likely to jeopardize the continued existence of any endangered species or threatened species or result in

²³ U.S. FWS, Determination of Threatened Status and Critical Habitat for the Railroad Valley Springfish, 51 Federal Register 6, 10857-10865 (1986).

²⁴ Memorandum from US Fish and Wildlife Service to District Manager, BLM Ely District Office, entitled “Comments on Proposed 2016 Oil and Gas Leases in the Ely District Office, Nevada.” June 3, 2016. File Nos. 08ENVS00-2016-CPA-0005 and 84320-2008-F-0078. Enclosed here as Attachment B.

²⁵ Memorandum from US Fish and Wildlife Service. “Southern Nevada Fish and Wildlife Office’s Recommendation of Hydrographic Basins for Closure to Oil and Gas Leasing in BLM’s Ely District Office, Nevada.” Enclosed here as Attachment C.

the destruction or adverse modification of habitat of such species which is determined ... to be critical.”16 U.S.C. § 1536(a)(2).

The definition of agency “action” is broad and includes “all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies,” including programmatic actions. 50 C.F.R. § 402.02. Likewise, the “action area” includes “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.” Id.

The duties in ESA section 7 are only fulfilled by an agency’s satisfaction of the consultation requirements that are set forth in the implementing regulations for section 7 of the ESA, and only after the agency lawfully complies with these requirements may an action that “may affect” a protected species go forward. *Pac. Rivers Council v. Thomas*, 30 F.3d 1050, 1055-57 (9th Cir. 1994). The action agency must initially prepare a biological assessment (BA) to “evaluate the potential effects of the proposed action” on listed species. 50 C.F.R. § 402.12. If the action agency concludes that the proposed action is “not likely to adversely affect” a listed species that occurs in the action area, the Service must concur in writing with this determination. Id. §§ 402.13(a) and 402.14(b). If the Service concurs in this determination, then formal consultation is not required. Id. § 402.13(a). If the Service’s concurrence in a “not likely to adversely affect” finding is inconsistent with the best available data, however, any such concurrence must be set aside. See id. § 402.14(g)(8); 5 U.S.C. § 706(2). If the action agency concludes that an action is “likely to adversely affect” listed species or critical habitat, it must enter into “formal consultation” with the Service. 50 C.F.R. §§ 402.12(k), 402.14(a). The threshold for triggering the formal consultation requirement is “very low”; indeed, “any possible effect ... triggers formal consultation requirements.”

Formal consultation commences with the action agency’s written request for consultation and concludes with the Service’s issuance of a “biological opinion.” 50 C.F.R. § 402.02. The biological opinion states the Service’s opinion as to whether the effects of the action are “likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat.” Id. § 402.14(g)(4). When conducting formal consultation, the Service and the action agency must evaluate the “effects of the action,” including all direct and indirect effects of the proposed action, plus the effects of actions that are interrelated or interdependent, added to all existing environmental conditions – that is, the “environmental baseline.” Id. §§ 402.14 and 402.02. The environmental baseline includes the past and present impacts of all Federal, state, and private actions and other human activities in the action area...” Id. The effects of the action must be considered together with “cumulative effects,” which are “those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation.” Id.

If the Service concludes in a biological opinion that jeopardy is likely to occur, it must prescribe “reasonable and prudent alternatives” to avoid jeopardy. *Id.* § 402.14(h)(3). If the Service concludes that a project is not likely to jeopardize listed species, it must nevertheless provide an incidental take statement (ITS) with the biological opinion, specifying the amount or extent of take that is incidental to the action (but which would otherwise be prohibited under Section 9 of the ESA), “reasonable and prudent measures” (RPMs) necessary or appropriate to minimize such take, and the “terms and conditions” that must be complied with by the action agency to implement any reasonable and prudent measures. 16 U.S.C. § 1536(b)(4); 50 C.F.R. § 402.14(i).

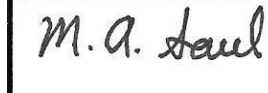
The ESA requires federal agencies to use the best scientific and commercial data available when consulting about whether federal actions will jeopardize listed species. See 16 U.S.C. § 1536(a)(2). Accordingly, an action agency must “provide the Service with the best scientific and commercial data available or which can be obtained during the consultation for an adequate review of the effects that an action may have upon listed species of critical habitat.” 50 C.F.R. § 402.14(d). Likewise, “[i]n formulating its biological opinion...the Service will use the best scientific and commercial data available.” *Id.* § 402.14(g)(8). However, if the action agency failed “to discuss information that would undercut the opinion’s conclusions,” the biological opinion is legally flawed, and the ITS will not insulate the agency from ESA Section 9 liability. See *Ctr. for Biological Diversity v. BLM*, 698 F.3d 1101, 1127-28 (9th Cir. 2012).

Section 7(d) of the ESA provides that once a federal agency initiates consultation on an action under the ESA, the agency, as well as any applicant for a federal permit, “shall not make any irreversible or irretrievable commitment of resources with respect to the agency action which has the effect of foreclosing the formulation or implementation of any reasonable and prudent alternative measures which would not violate subsection (a)(2) of this section.” 16 U.S.C. § 1536(d). The purpose of section 7(d) is to maintain the environmental status quo pending the completion of consultation. Section 7(d) prohibitions remain in effect throughout the consultation period and until the federal agency has satisfied its obligations under section 7(a)(2) that the action will not result in jeopardy to listed species or adverse modification of critical habitat.

IX. Conclusion

BLM has failed to adequately disclose and analyze the impacts from the proposed action, has failed to adhere to its own regulations and previous decision-making with regard to attaching protective stipulations to the lease and proposed action, and has failed to consult with the US Fish and Wildlife Service as required under Section 7 of the Endangered Species Act. The combination of these failures gives the impression of a cavalier approach to permitting the proposed action, one that contravenes the spirit, intent, and language of the National Environmental Policy Act to which it must adhere. BLM needs to re-do or significantly amend the APD EA to conform to applicable laws and regulations.

Sincerely,

A handwritten signature in black ink that reads "M. A. Saul". The signature is written in a cursive style and is positioned to the right of a vertical line.

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U.S. Department of the Interior
Bureau of Land Management

Environmental Assessment

DOI-BLM-NV-B020-2019-0020-EA

West Grant Canyon Development, LLC
Application for a Permit to Drill
Butterfield No. 1 Oil Well

File Number: NVN-095552

PREPARING OFFICE

U.S. Department of the Interior
Bureau of Land Management
Battle Mountain District, Nevada



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1. Introduction

1.1. Summary

West Grant Canyon Development, LLC (WGC), has leased a parcel of Federal land for potential oil and gas development, Bureau of Land Management (BLM) case file number N-095552 under the Mineral Leasing Act of 1920, as amended and supplemented, and Part 3100 of Chapter 43, Code of Federal Regulations (CFR). On September 12, 2018, the BLM received from WGC an Application for Permit to Drill (APD), proposing to drill Butterfield Federal No. 1. The proposed well would be situated in Section 21, T. 7 N., R. 56 E., Mount Diablo Meridian (M.D.M.), generally 19 miles southwest of Currant and 9 mile southeast of Locke's Ranch in Railroad Valley, Nevada (Figure 1).

On September 5, 2018 WGC filed a road right-of-way (ROW) application (BLM case file number N-97203) with Tonopah Field Office for an existing road which would grant access from a U.S. Highway 6 to the lease boundary (Figure 2). Access to the well pad from the ROW will be via a bladed, two-track road, 2,100 feet southwest of the ROW diversion point, at the intersection of sections 16, 17, 20 and 21, T. 7 N., R. 56 E., M.D.M.

- **Under the Proposed Action:** The exploration well would be drilled and the Right-of-Way would be granted.
- **Under the No Action Alternative:** The exploration well would not be drilled, the Right-of-Way would not be granted and no further surface disturbance would occur.

The approval of the APD and ROW are federal actions subject to analysis under the National Environmental Policy Act (NEPA) of 1969 (Public Law [PL] 1-91-190, as amended [42 United States Code (USC) 4321 et seq.]). The BLM Tonopah Field Office determined that an environmental assessment (EA) is required to analyze the Butterfield Federal No. 1 APD and ROW request. This EA analyzes the direct, indirect, and cumulative impacts of the Proposed Action in order to provide the information needed to determine if it would have significant impacts, in which case an Environmental Impact Statement (EIS) would be required.

Under any alternative, all appropriate statutes, regulations and policies (see Section 1.4) and *Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development* (DOI and USDA 2007; commonly referred to as The Gold Book) would be applied.

1.2. Purpose and Need for Action, and Decision to be Made

The purpose of the action is to provide WGC with authorized use of the public land managed by the BLM to drill the Butterfield Federal No. 1 well and develop associated infrastructure, and to provide legal access to the drill site across BLM-managed public land, in compliance with the Federal Land Policy and Management Act of 1976 (FLPMA) and other applicable federal and state laws. The need for the action is established by BLM's legal responsibility to respond to

WGC's APD and application for a Title V FLPMA ROW for access to drill Butterfield Federal No. 1 well on Oil and Gas lease N-095552, on which they have valid existing lease rights. The Authorized Officer (AO) must determine whether or not to approve the APD and ROW grant and thus grant access and authorization to drill at the proposed location and use/improve the 11.06 miles of existing road.

1.3. Land Use Plan Conformance

Tonopah RMP (Tonopah Field Office), approved 1997

The Proposed Action is in conformance with the Tonopah Resource Management Plan (RMP) and Record of Decision approved on October 2, 1997.

The Fluid Minerals Objective in the Tonopah RMP (page 22) is "To provide opportunity for exploration and development of fluid minerals such as oil, gas, and geothermal resources, using appropriate stipulations to allow for the preservation and enhancement of fragile and unique resources."

The proposal is within an area that is designated as "open to fluid minerals leasing subject to standard lease terms and conditions" (Tonopah RMP, page 22).

The Lands and Rights-of-Way Objective in the Tonopah RMP (page 18) is "To make lands available for community expansion and private economic development and to increase the potential for economic diversity."

A Standard Operating Procedure (Tonopah RMP, page 33) states, "Unless the land has been dedicated to a specific use or uses, public land within the Tonopah Planning Area is available for consideration for linear rights-of-way for access, and for utility transportation and distribution purposes. Such land is also available for areal rights-of-way purposes."

1.4. Relationship to Statutes, Regulations and Policy

The Proposed Action is in conformance with the NEPA of 1969 (P.L. 91-190 as amended; 42 USC §4321 et seq.); the Mineral Leasing Act of 1920 as amended and supplemented (30 USC 181 et seq.); the Federal Oil and Gas Leasing Reform Act of 1987, with regulatory authority under 43 CFR Part 3100, Onshore Oil and Gas Leasing and 43 CFR Part 3160, Onshore Oil and Gas Operations; 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.

BLM Onshore Order #1 was established pursuant to the authority prescribed in 43 CFR 3160. It requires that approval of all proposed exploratory, development, and service wells and all required approvals of subsequent well operations and other lease operations be obtained in accordance with 43 CFR 3162.3-1, 3162.3-2, 3162.3-3, 3162.3-4 and 3162.5-1.

Pursuant to 43 CFR 3101.1-2, a lessee shall have the right to use so much of the leased lands as is necessary to explore for, drill for, mine, extract, remove and dispose of all the leased resource in a leasehold, subject to: stipulations attached to the lease; restrictions derived from specific, non-discretionary statutes; and such reasonable measures as may be required by the Authorized Officer (AO) to minimize adverse impacts to other resource values, land uses or users not addressed in the lease stipulations at the time operations are proposed.

The exploration must be in conformance with all Nevada State and Federal requirements including, but not limited to, those of the BLM, State of Nevada Division of Minerals, State of Nevada Division of Environmental Protection, Nevada State Engineer, and the Federal Environmental Protection Agency.

National policy under 43 CFR 2801.2 states, “It is BLM’s objective to grant rights-of-way under the regulations in this part to any qualified individual, business, or governmental entity and to direct and control the use of rights-of-way on public lands in a manner that:

- Protects the natural resources associated with public lands and adjacent lands, whether private or administered by a government entity;
- Prevents unnecessary or undue degradation to public lands;
- Promotes the use of rights-of-way in common considering engineering and technological compatibility, national security, and land use plans; and
- Coordinates, to the fullest extent possible, all BLM actions under the regulations in this part with state and local governments, interested individuals, and appropriate quasi-public entities.”

The Proposed Action is in conformance with Nye County Policy Plan for Public Lands (2011, page 38) which states, “Oil and gas resources should be inventoried and development encouraged. Public lands with a high potential for oil or gas resources should not be withdrawn from exploration.”

1.5. Scoping and Public Involvement

WGC submitted a Notice of Staking (NOS) on June 13, 2018. A site inspection was coordinated with representatives from WGC and BLM; the site inspection was conducted on June 25, 2018. The NOS was made available for public review and comment in the Tonopah Field Office public room from June 25, 2018 to August 25, 2018. BLM contacted Nevada Department of Wildlife (NDOW) for input in July 2018.

Internal scoping: A BLM interdisciplinary team (List of Preparers) conducted internal scoping to identify potentially affected resources (Chapter 3, Tables 1 and 2).

Native American Coordination: TFO began coordination with the Duckwater Shoshone Tribe on June 21, 2018 following the NOS. BLM met with Mr. Warren Graham, representative of the

Duckwater Shoshone Tribe, on July 10, 2018 at the ROW diversion to inspect and discuss the project. BLM received a response letter from Duckwater Shoshone Tribe with no comments on July 16, 2018. Mr. Warren Graham indicated a further site visit might take place during construction activities but there were no concerns at the time of the inspection. BLM sent an additional letter following receipt of the APD to the Duckwater Shoshone Tribe but no further comments were received. However, coordination with the Tribes is always ongoing.

The EA was made available for public comment from May 3 to May 17. Dear Interested letters were sent to 63 individuals, local, state and federal agencies, and various organizations on May 3, 2019, including United States Fish and Wildlife Service. One comment letter was received from the Center for Biological Diversity, Sierra Club, and Western Watersheds. Based on the comments in that letter the following changes were made to the EA.

Section 2.1, under the heading “*production*” was modified to add a statement about hydraulic fracturing (HF). Section 3.3.3 Floodplains was edited to include environmental protection measures WGC will incorporate to minimize potential impacts. Section 3.3.5 was edited to discuss water quality and infiltration.

Table 2 was modified under special status species to remove the words “or near” due to indeterminate proximity.

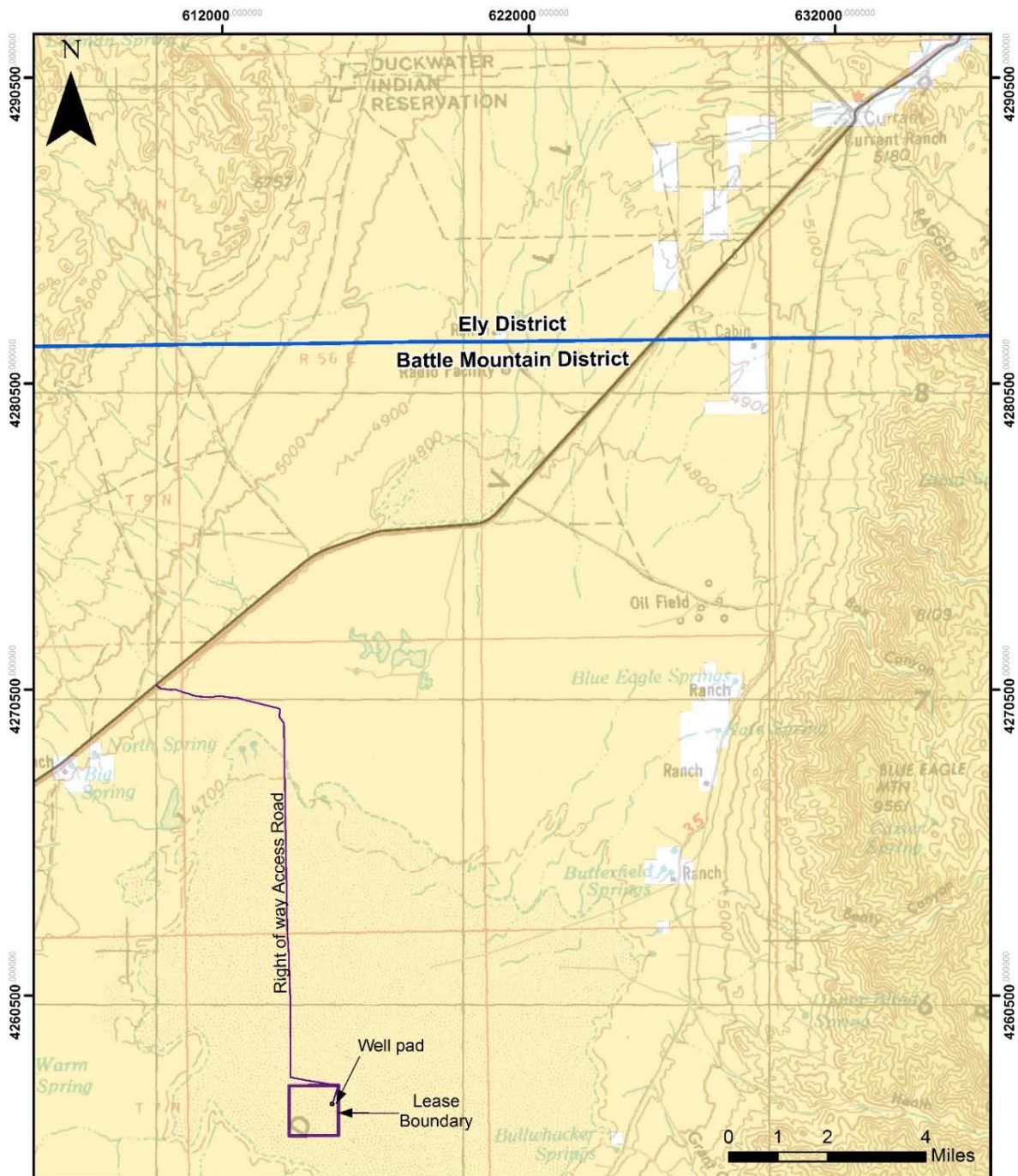
Appendix A was re-titled to be “Environmental Protection Measures” rather than “Conditions of Approval” to distinguish them as conditions associated with protecting resources, rather than conditions under which drilling may take place. Water resources stipulations omitted in the lease sale are now part of the SOP (Appendix B).

2. Proposed Action and No Action Alternative

2.1. Description of the Proposed Action

WGC has leased a parcel of Federal land for potential oil and gas development under the Mineral Leasing Act of 1920, as amended and supplemented, and Part 3100 of Title 43, Code of Federal Regulations (CFR). On September 12, 2018 the BLM received a revised APD from WGC, to drill the Butterfield Federal No. 1 in Railroad Valley, Nevada. Main components of the project relevant to environmental effects are described in this chapter. Also see Environmental Protection Measures (EPM) (Appendix A), Standard Operating Procedures (SOP) (Appendix B). No lease-specific stipulations were identified at the time of the parcel’s sale.

Location: The proposed well location would be situated in Section 21, T. 7 N., R. 56 E., M.D.M. approximately 19 miles southwest of the town site of Currant in Railroad Valley, Nevada. Railroad Valley is a broad valley, part of which is a flat playa, bounded by mountain ranges; the valley’s elevation range is approximately 4,700 to 5,000 feet (Figure 1).



**Butterfield Federal No. 1
APD Location Map**

1:160,000



United States Department Of The Interior

Bureau of Land Management
Tonopah Field Office
1553 S. Main Street/P.O. Box 911
Tonopah, NV 89049



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

- Butterfield_Federal_No_1
- Private
- ▭ Lease_Area
- ▭ Bureau of Land Management

Figure 1 Location of proposed Butterfield Federal No. 1 oil well site.

Access roads: Access is via U.S. Highway 6, approximately 19 miles southwest of Currahn to an existing right-of-way (ROW) held by Makoil (N-91244). WGC has requested an additional ROW

grant (N-97203) for access to the lease boundary. The ROW road departs U.S. Highway 6, heading east for 2.6 miles, then due south 7.5 miles, then east again for one mile to the lease boundary (Figure 2.) The ROW is for 14' width across the entire length with turnouts approximately every mile. A turnout will consist of a 16 feet wide, (not including road), 100 feet long trapezoidal transition zone to allow a tractor trailer to effectively pass oncoming traffic.

Upon reaching the lease boundary, a new road, approximately 2,000 feet long, would be constructed in order to access the well pad. The road would be bladed to an approximate 16 feet wide travel surface. The road is to be crowned, and surfaced with gravel sourced from a BLM community pit located north of U.S. Highway 6 in Section 1, T. 8 N, R. 55 E., MDM. Culverts and drainage ditches would be installed only if determined necessary by the AO (Figure 3). The total surface disturbance for the access road and turnout on the lease would be 0.8 acres.

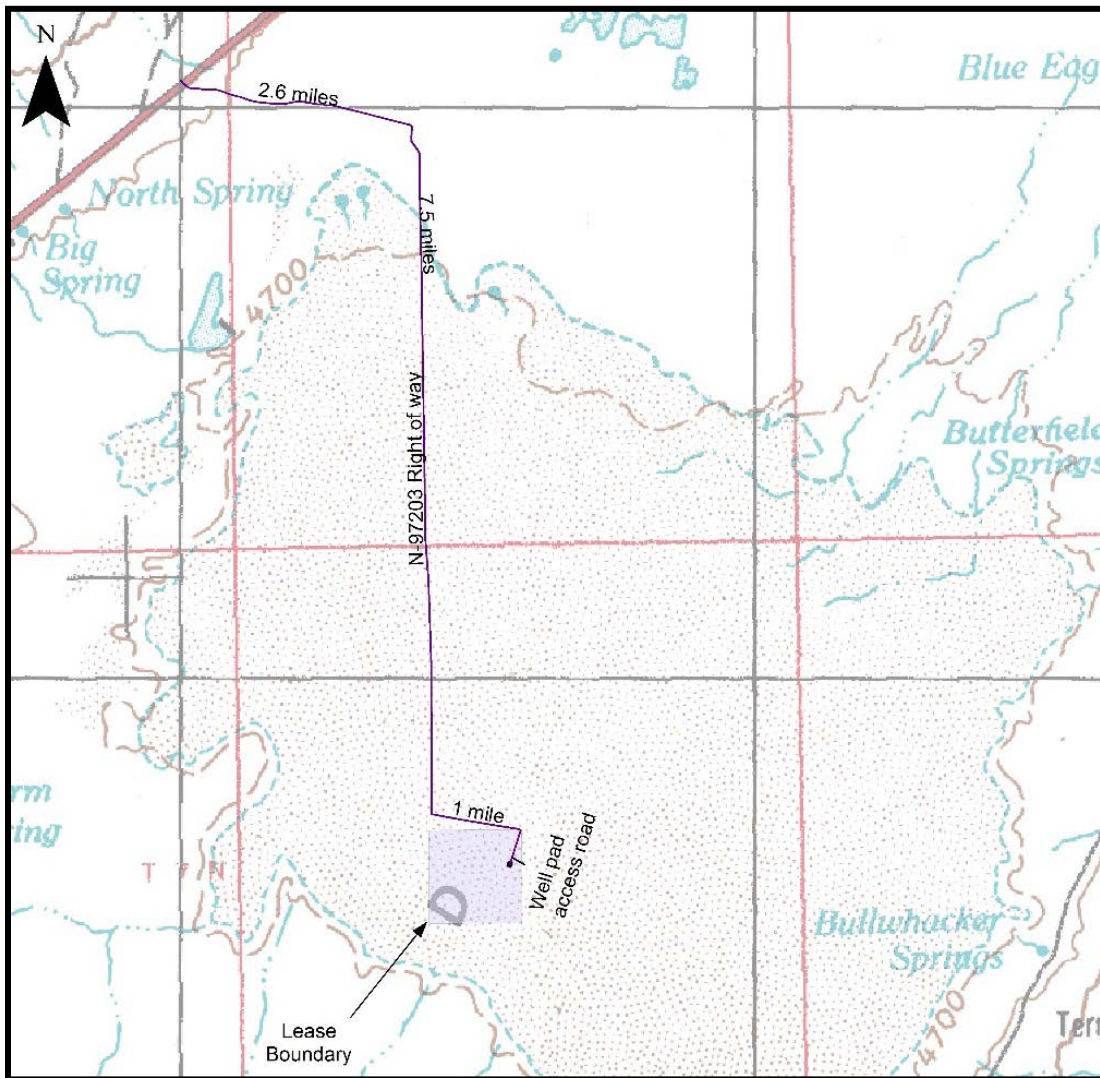


Figure 2 General location of well pad relative to the Right of Way.

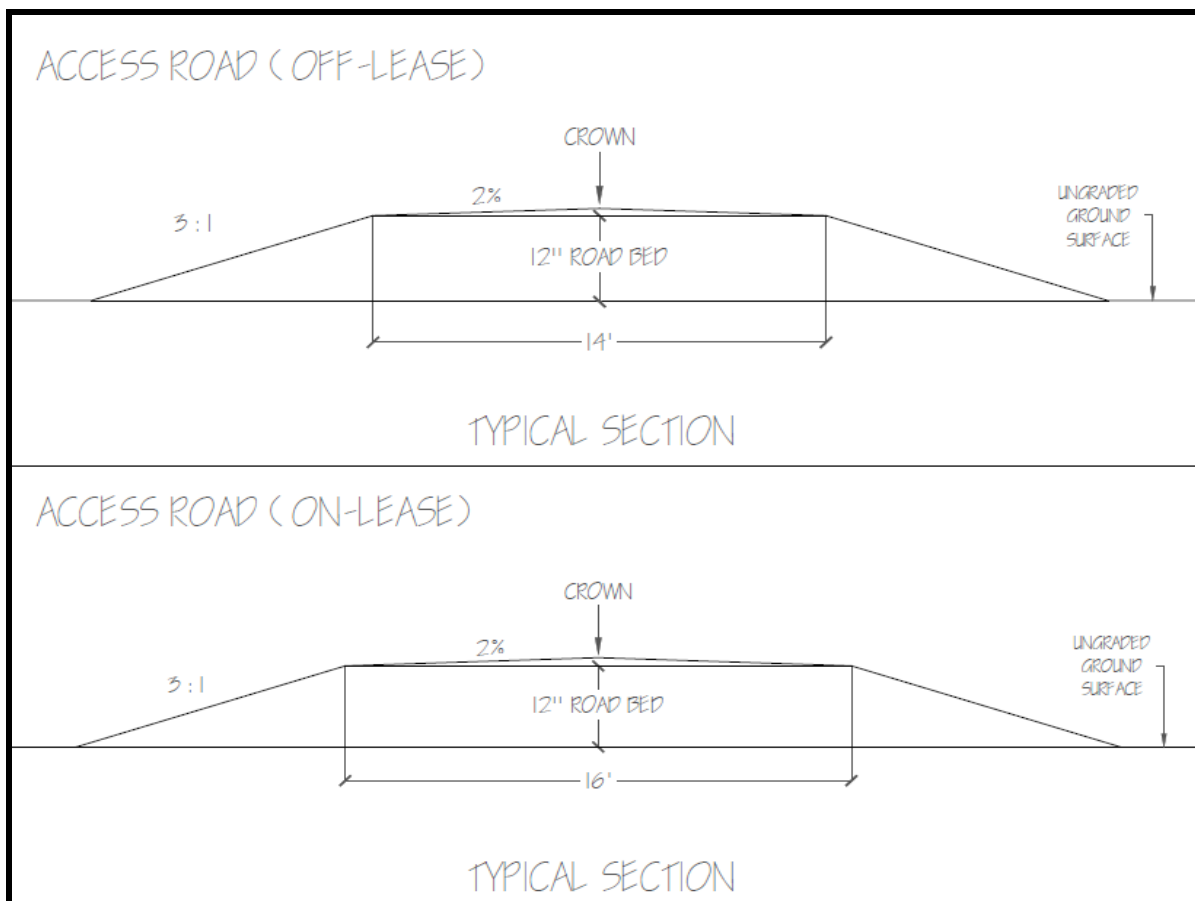


Figure 3 Access Road Detail (on and off lease (ROW))

Wellhead and pad: The well pad would be constructed at the end of the road, oriented length-parallel to the road, with dimensions of 240 feet wide by 360 feet long (1.98 acres) with a 100 feet buffer around the perimeter for top soil and material storage. The well would be placed central to the pad and a mud reserve pit would be located in the southwest corner of the well pad. Figure 4 illustrates the general well pad design.

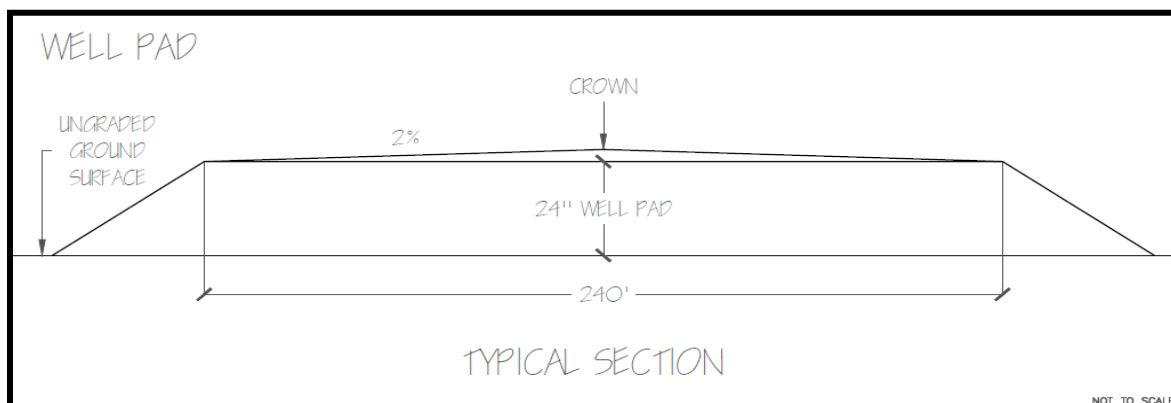


Figure 4 Cross Section of Well Pad

Drilling: The proposed oil well would be drilled to an approximate depth of 8,000 feet. The drilling mud, used to lift the drill cuttings, would be contained in a reserve pit, with dimensions 160 feet long and 80 feet wide, with a depth of 8 feet, covering approximately 0.29 acres.

The depth to the water table is near surface; therefore, the reserve pit would be lined with clay to prevent contamination of the water table. During drilling the pit would be fenced on three sides to keep out large wildlife, livestock and humans; however, escape ramps, ladders or other methods of escape would be incorporated into the design.

During drilling, the blowout preventer (BOP) and related pressure control equipment would be installed, tested and maintained in compliance with *Onshore Oil & Gas Order #2*.

The time to drill the well to the total depth is estimated to take 21-28 days after drilling commences.

Water supply: On September 8, 2018, Harbor Petroleum, LLC, working on behalf of WGC applied for a water use permit from the Nevada Division of Water Resources (NDWR) to drill an onsite groundwater supply well, located in SE ¼ NE ¼, Section 21, T. 7 N., R. 56 E., MDM. The permit was issued on September 18, 2018 and terminates on September 18, 2019. In conjunction with the permit to drill, an Affidavit of Intent to Plug a Well was prepared by the project proponent for the abandonment of this well. The water supply well will be used for drilling and road watering and will be located on the proposed well pad (see Figure 5).

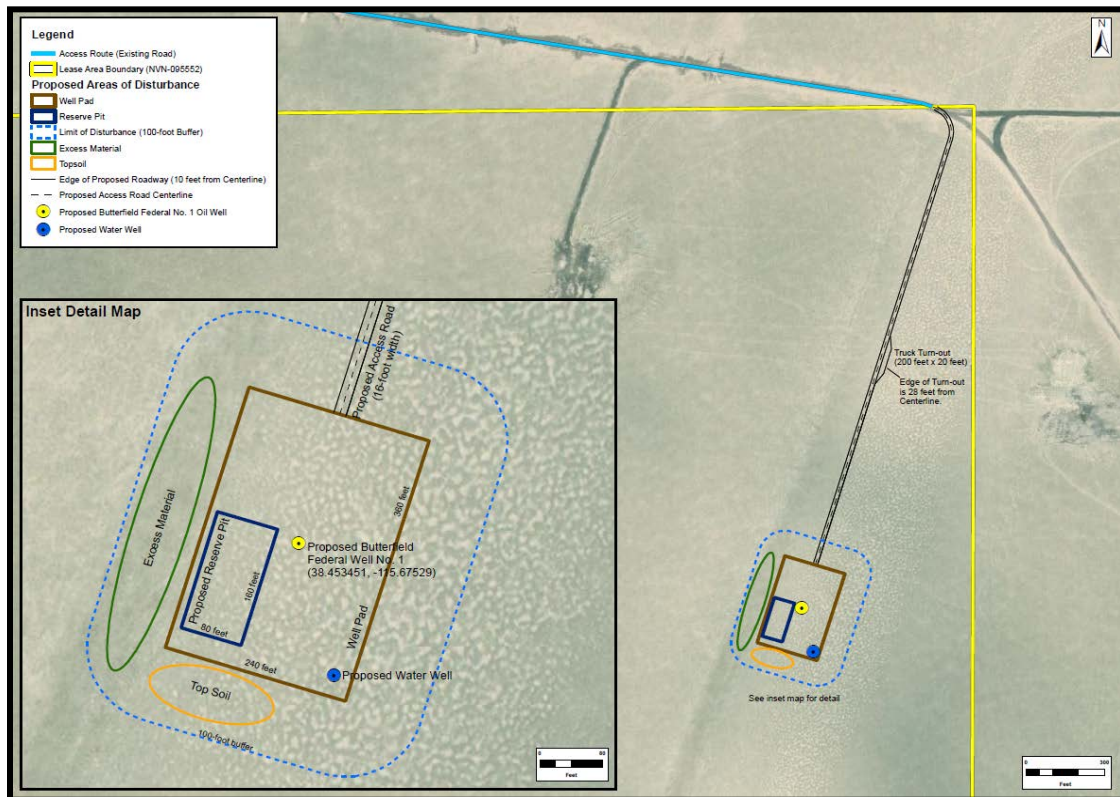


Figure 5 Layout of well pad showing pad area, reserve pit, and well location

The water well will be constructed of eight-inch thermoplastic polyvinyl chloride (PVC) well casing, and drilled using standard mud-rotary methods, to a depth of approximately 200 feet. A slotted casing and filter pack will be installed from 50 feet below ground surface to the bottom of the hole. A total of approximately 500,000 gallons of water is expected to be used during drilling operations. This is equivalent to 16,540 gallons per day. The well will be abandoned in accordance with the provisions in Nevada Administrative Code (NAC) 534.420.

Surface disturbance: The maximum potential total area of surface disturbance for drilling activities on the lease are 6.2 acres (Figure 5). This does not include the ROW.

Production: If after completion of operations production is obtained, a completion report would be submitted to the AO. Well pumping equipment and layout would be constructed on the gravel fill of the well pad. A dike would be constructed to encompass all the production equipment, designed to contain fluids up to 110% capacity of the largest vessel. Above-ground equipment would be designed and placed to visually blend in with the surrounding landscape. Any additional facilities or disturbance beyond the disturbance area addressed in this EA would be subject to additional NEPA analysis, including hydraulic fracturing (HF).

Waste disposal:

- A trash dumpster would be placed onsite on the proposed well pad and waste material would be hauled to a BLM-approved landfill when the dumpster is full.
- Drilling fluids and cuttings would be captured in the reserve pit and fenced according to the SOPs, Appendix B.
- Produced fluids will be captured in portable vessels on location during and following drilling and testing. Produced water is to be collected in the reserve pit during drilling and testing per Onshore Order #7.
- If formation water is encountered, an appropriate application process would be conducted for water disposal.
- Portable chemical toilets will be rented and used onsite. The rental company would haul away and dispose of sewage regularly according to State and BLM requirements in EPMs.
- All oil, diesel, or hydraulic fluid spills will be prevented and cleaned up immediately, excavated and removed as required to eliminate contaminated soil. All spill-related materials would be hauled to an approved disposal site.
- All hazardous substances would be stored in appropriate containment to prevent site contamination. Current Safety Data Sheets for all chemical substances which are used during the course of drilling, completion, reclamation, and testing operations for this project must be present at the site.

Restoration: When drilling is completed, the fourth side of the reserve pit would be fenced and, if potentially harmful fluids remain, the pit would be netted to exclude birds. The pit would then

be allowed to dry. Fencing and netting would be maintained until the pit is reclaimed (see SOP, Appendix B). To reclaim the pit, fencing materials would be removed, the pit backfilled and re-contoured with the topsoil spread over the surface within one year of proper plugging and abandonment of the well. If production is not achieved, the operator would place a dry hole marker; remove excess gravel; backfill, level and re-contour; scarify the well pad; and spread the stored topsoil over the surface. If reseeding is needed it would be performed per BLM recommendations. The operator would be responsible for weed control within disturbed areas, using the Noxious Weed Management Plan as part of the APD proposal (Appendix D). If testing shows that production is feasible, all equipment not needed for production would be removed from the site. Other cleanup would be done as needed.

Construction, operation and reclamation standards and requirements: All authorized construction, operation and reclamation would be consistent with the Gold Book (DOI and USDA 2007). EPMs of the Proposed Action are presented in Appendix A of this EA; required SOPs are presented in Appendix B.

2.2. No Action Alternative

Under the No Action alternative, the BLM would not approve the APD or ROW and WGC would not have access to or an authorization to drill the proposed oil well. BLM's authority to implement the No Action alternative is limited because oil and gas lease holders possess valid existing rights to explore and potentially develop their lease subject to the stipulations of the specific lease agreement. However, BLM can deny the APD if the proposal would violate lease stipulations or applicable laws and regulations, or result in undue or unnecessary environmental degradation.

3. Affected Environment and Environmental Consequences

3.1. Supplemental Authorities and Other Resources Considered

The NEPA Handbook Appendix 1 (BLM 2008) and the Nevada Instruction Memorandum BLM-NV-IM-2009-030 list elements of the environment that are addressed by Supplemental Authorities, i.e. requirements that are specified by statute or Executive Order (EO) and that must be considered in BLM environmental documents. Table 1 lists these elements and provides a determination of whether each element is present in the Project Area and if it would be affected by the Proposed Action or No Action alternative. Elements that do not occur in the Project Area are not discussed further in this EA, based on the rationale provided in the table. The elimination of non-relevant issues follows Council on Environmental Quality (CEQ) policy, as stated in 40 CFR 1500.4. The potential effects of the Proposed Action and No Action Alternative are discussed under Section 3.3.

Table 1 Supplemental Authorities Considered in the Analysis.

Supplemental Authority element	Not Present	Present / Not Affected	Present/May be Affected	Rationale
Air Quality			●	See discussion in Sections 3.3.1. & 4.3.1.
Area of Critical Environmental Concern (ACEC)	●			There are no ACECs within or near the area of the Proposed Action.
Cultural Resources		●		See discussion in Sections 3.3.2. & 4.3.2.
Environmental Justice	●			No minority or low-income populations would be disproportionately affected by the Proposed Action.
Farmlands, Prime or Unique	●			No prime or unique farmlands are located within the area of the Proposed Action.
Noxious Weeds/ Invasive Nonnative Species	●			The Proposed Action would have little effect on noxious weed species because is no vegetation in the project area currently. In addition, the Proposed Action incorporates a noxious weed plan for preventing weeds for growing and spreading (Appendix D).
Native American Religious Concerns	●			The Proposed Action would not compromise the integrity of any known traditional, spiritual, cultural or ceremonial use area, nor would it limit or prevent access to any traditional or ceremonial sites that may currently be in use. Native American coordination is ongoing.
Floodplains			●	See discussion in Section 3.3.3. & 4.3.3.
Wetlands and Riparian Areas		●		The project area does not intersect any wetland or riparian area and is 2.5 miles North of Flowing well #7, the nearest riparian area. See discussion Section 3.3.5. & 4.3.5.
Threatened and Endangered Species	●			No Threatened or Endangered plants or animals or their habitats are known to exist in or near the project area. See discussion in Section 3.3.6. & 4.3.6.
Migratory Birds		●		See discussion under Section 3.3.6. & 4.3.6
Waste – Hazardous/Solid		●		See discussion in 3.3.7. & 4.3.7.
Water Quality	●			Water quality is protected through BMPs that isolate water sources from drilling equipment, fluids, and surface contamination.

Supplemental Authority element	Not Present	Present / Not Affected	Present/May be Affected	Rationale
Wild & Scenic Rivers	•			There are no rivers or river segments, designated, or eligible to be designated, for inclusion in the National Wild and Scenic Rivers System in or near the Project Area.
Wilderness/ Wilderness Study Areas/Lands with wilderness characteristics	•			The Project Area is not in a designated Wilderness nor WSA. The project area is in wilderness inventory unit NV-060-186 which was found not to possess wilderness characteristics based on inventories conducted in 1980 and 2012 and 2017.
Human Health and Safety	•			Human health and safety are not expected to be affected by the Proposed Action because the required Conditions of Approval and SOPs (Appendices A and B) include those considered necessary to ensure human health and safety.

3.2. Other Resources Considered in the Analysis

Other elements of the human environment (resources) that have been considered in this environmental assessment (EA) are listed in Table 2. Those that may be affected by the Proposed Action and alternative are further described in the EA. Resources determined to be not be affected are not further analyzed in this EA, the rationale for this finding is stated in the table.

Table 2 Other resources that may be affected by the proposed action

Other Resources	Not Present	Present/Not Affected	Present/May be Affected	Rationale
Grazing Management		•		The project is located in the Nyala Allotment and would have no impact to grazing management.
Land Use Authorizations		•		See discussion in Section 3.3.10. & 4.3.10.
Minerals	•			There are active placer mining claims, but no active, pending, or expired mining Plans of Operation or Notices, or active or pending sodium or potassium prospecting permits located within T. 7 N., R. 56 E., Section 21, MDM.
Paleontological Resources	•			There are no known paleontological resources in the project area since there are no outcrops containing fossils in the project area.

Other Resources	Not Present	Present/Not Affected	Present/May be Affected	Rationale
Recreation	•			There is no Special Recreation Management Area (SRMA) and there are only dispersed recreation resources in the general project area. Impacts to dispersed recreation opportunities, if any, would be very slight.
Socio-Economic Values	•			The Proposed Action would not be expected to create new jobs or significant revenues for local communities, or impact community services.
Soils		•		See discussion under 3.3.4. & 4.3.4.
Special Status Species		•		See discussion under Special Status Species (Wildlife). There are no Special Status Plant Species within the Project Area.
Vegetation	•			There is no vegetation in the project area.
Visual Resources		•		See discussion in Section 3.3.9. & 4.3.9.
Wild Horses and Burros	•			No wild horse or burros are known to inhabit the project area, and it is not in a Herd Management Area (HMA).
Wildlife		•		See discussion in Section 3.3.6. & 4.3.6

3.3. Effects Analysis

3.3.1. Air Quality

Affected Environment

Weather in central Nevada is characterized by low humidity and large diurnal variations in temperature. Prevailing wind patterns are generally west to east but local wind patterns are also dependent upon topography. Occasional intense winds can cause localized dust storms and decreased visibility.

Air quality in the project area has been designated as “attainment/unclassified” (which means it either meets, or is assumed to meet, the applicable federal ambient air quality standards) for all standard (“criteria”) air pollutants (U.S. Environmental Protection Agency, 2007). The Nevada Department of Conservation and Natural Resources, Division of Environmental Protection, Bureau of Air Pollution Control has been delegated responsibility by both the Environmental Protection Agency and the State of Nevada to regulate air pollution and emissions of air pollutants in this area. The project area is not located in or adjacent to any mandatory Class I (most restrictive) Federal air quality areas, U.S. Fish and Wildlife Service Class I air quality units, or American Indian Class I air quality lands.

Environmental Consequences of the Proposed Action on Air Quality

If the proposed action is approved, the fine-grained nature of the existing soils within the

assessment area would likely contribute to a localized increase in dust particles from road and well pad construction and maintenance and mineral material mining and access. The effect on air quality would be mainly in the form of an increase in fugitive dust related to the freshly disturbed ground surfaces and exhaust fumes from motorized equipment during the construction and drilling activities. Increased traffic on the existing roads would also add to the total; however, the impacts would be minor, would occur over a month to six month period, and implementation of the SOPs in Appendix B would reduce any impacts. All operations would comply with applicable air quality standards.

3.3.2. Cultural Resources

Cultural resources in the Great Basin region include prehistoric and historic-period resources such as buildings, sites, structures, objects, and districts. Prehistoric cultural resources are associated with the human occupation and use of Nevada before long-term European occupation and include traces of Native American life such as camp sites, rock art, and trails, some dating to over 12,000 years. Historic-period cultural resources represent both the archaeological and built environment, including structures, historic districts, and the foundations of industrialization.

On December 7 and 8th of 2018, ARH Archaeology & Architectural History LLC (ARH) completed a Class III cultural resources inventory of the ROW and well pad (CR 6-3258). This inventory fulfilled obligations under Section 106 of the amended National Historic Preservation Act (NHPA) and the National Environmental Protection Act (NEPA) and was conducted in accordance with the State Protocol Agreement Between the Bureau of Land Management, Nevada and The Nevada State Historic Preservation Office (2014), The BLM Guidelines and Standards for Archaeological Inventory (2012), and the USDI Fish and Wildlife Service, USDI Bureau of Land Management, and USDA Forest Service Guidelines for Recording and Reporting Architectural Resources in Nevada (2014).

Environmental Consequences of the Proposed Action on Cultural Resources

Consultation between the Battle Mountain District of the BLM and Nevada SHPO resulted in the designation of a Direct Area of Potential Effect (APE) of 47.8 acres encompassing of the access road and well pad. An indirect APE was not defined due to the nature of the undertaking. During the inventory, ARH recorded one archaeological site and one isolated artifact. The site was determined not eligible for inclusion in the National Register of Historic Places (NRHP) under any criteria. The isolated artifact is categorically not eligible for inclusion in the NRHP per Section V.1.a.1 of the State Protocol Agreement between the Bureau of Land Management, Nevada and The Nevada State Historic Preservation Office (2014). The BLM has determined a finding of No Historic Properties Affected (No Effect) for this undertaking.

Environmental Consequences of the No Action Alternative on Cultural Resources

Under the No Action Alternative, conditions within the Proposed Action location are expected to remain generally in their current state. No historic properties are located within the Proposed Action location; therefore, there would be no direct effects to such resources under the No Action alternative. Also, under the No Action Alternative there would be no indirect effects to cultural resources as, in its current state, the Proposed Action location introduces no visual, atmospheric, auditory, or vibrational impacts within or beyond the location.

3.3.3. Floodplains

Affected Environment

The proposed Butterfield Federal No. 1 well site is located near the south-central portion of the Railroad Valley playa, inside the Federal Emergency Management Agency (FEMA) 100-year floodplain. During the summer months, thunderstorms develop over the Grant and Quinn Ranges to the east, which can result in overland flow and ponding in the area of the Proposed Action. During the winter months the depth of the water table becomes very shallow, which can cause ponding of water on the playa surface and generally unstable surfaces. Evaporation rates are high in spring, summer, and fall.

Environmental Consequences of the Proposed Action on Floodplains

The proposed ROW and lease boundary are located within a playa depression, or terminal drainage. Road surfaces could become flooded, washed out or submerged depending on the precipitation event. Roads, drill pad, and pit areas are designed to withstand flooding at the 100-year flood level (Appendix B). WGC will incorporate design features such as culverts to route floodwaters around the well pad or through a road, elevated structures, and anchoring objects prior to flooding. WGC will apply for a flood damage prevention permit from Nye County prior to the start of the project. The required reclamation would restore the floodplains to their natural state, with culverts removed.

Environmental Consequences of the No Action Alternative on Floodplains

Under the No Action Alternative, the proposed ROW, access road, well pad, and well would not be drilled on the playa and the proposed well pad would not be constructed. The existing road where the ROW is proposed is already present and would not be improved. This alternative would have no effect on the floodplain.

3.3.4. Soils

Affected Environment

Both the proposed well pad and access road are located on soils derived from lacustrine or alluvium parent materials. These soils are strongly saline and with a loamy surface texture. The soils are poorly drained and runoff is typically high and water erodibility is slight. Wind erodibility is moderate to high on most soils.

Environmental Consequences of the Proposed Action on Soils

If the Proposed Action is approved, the potential direct and indirect effects on the soils include increased wind erosion potential. The construction of one well pad and a reserve pit using gravel laid down on erodible soils would limit the amount of erosion during exploration. In the case that production is not achieved, the gravel would be removed, the project area would undergo restoration using stockpiled topsoil and the site would be re-contoured; this action will minimize the effect of wind erosion.

Environmental Consequences of the No Action Alternative on Soils

Under the No Action alternative, there would be no effects to soil.

3.3.5. Water (Surface and Ground), Wetlands, Riparian Resources

Affected Environment

Ground water

The proposed action is located in the central part of the Railroad Valley hydrographic basin, designated as basin number 173B by the Nevada Division of Water Resources (NDWR). The basin covers an area approximately 2,149 square miles (mi²) and the estimated perennial yield for this basin is 75,000 acre-feet (AF). Railroad Valley and Hot Creek Valleys are combined as a sub-basin recognized by the U.S. Geological Survey (USGS) in the National Hydrography Dataset (NHD). The NDWR underground active summary shows the majority of groundwater is used for municipal and irrigation purposes. Groundwater is estimated to be 50 feet below surface at the proposed well pad.

Surface water, wetland, and riparian areas

Surface waters are located 5 to 6 miles northwest, northeast, and east. Spring sources are located due east along a range front fault. According to Denburgh and Rush, 1973, water quality near playas is highly saline. Surface waters encountered on the valley floor are the result of artesian water wells left flowing to create water bodies. Riparian areas develop near springs, artesian wells, areas of surface water pooling with conditions favorable to vegetation, habitats, or ecosystems that are associated with the water body. The closest artesian well source and riparian area is Flowing Well #7, located approximately 3 miles south of the proposed well site.

Environmental Consequences of the Proposed Action on Water (Surface and Ground), Wetlands, and Riparian Resources

Playa and lake deposits are composed primarily of silt and clay, and prevent infiltration of precipitation and runoff (Denburgh and Rush). The potential for surface to groundwater contamination will be reduced through spill prevention plans, general housekeeping, and collection of drilling fluids. The proposed oil well would be cased and cemented from the surface to near the bottom of the hole, several thousand feet below potable water aquifers. The intent of Nevada Revised Statute (NRS) 534.020 (2) is to prevent contamination and pollution of underground waters. After testing, the well would either be set up for production or the well

would be abandoned in accordance with BLM regulations and Nevada State laws. The State laws also require capping and containing artesian flow. No surface water exists within 3 miles of the proposed well location.

Environmental Consequences of the No Action Alternative on Water (Surface and Ground), Wetlands, and Riparian Resources

Under the No Action alternative, there would be no effects to water, wetlands or riparian resources.

3.3.6. Wildlife, Aquatic, Amphibious, and Avian Resources

Affected Environment

This section addresses wildlife species and habitats that are potentially in the project area, including special status wildlife: migratory birds, eagles, and BLM Sensitive wildlife species. There are no special status plants in the project area. For a complete list of special status species in the BLM Battle Mountain District, refer to Appendix C.

The mapped ecologic site is described as a saline meadow; however, there is no vegetation at the proposed well location. The area more closely resembles a playa.

Few wildlife species are likely to occupy the lease boundary. While the Great Basin region hosts several rare invertebrate species that occur nowhere else but in this otherwise inhospitable environment, there are none within a three mile radius. Additionally, this area is known to flood seasonally and though playas collect water, it is unlikely that ungulates would be drawn to this location as there are better sources for surface water and forage along the periphery of the playa. This section discusses select wildlife species or taxa (groups of species) that are known or likely to occur near the well location and for which federal law or BLM policy and guidance directs management actions, and includes preliminary scoping input from NDOW and USFWS for this EA. See Appendix C for an explanation and current list of Nevada BLM Sensitive species in the District.

Special Status Species

Special status species include species that are listed or proposed for listing as threatened or endangered (T&E) under the Endangered Species Act (ESA), species that are candidates for listing under the ESA, and species that are listed by the State of Nevada, and/or species that are on the 2017 Final BLM Nevada Sensitive and Special Species Status List. BLM Nevada Sensitive Species designation is normally used for native species that occur on BLM administered lands for which BLM has the capability to affect the conservation status of the species through management. BLM policy is to provide these species with the same level of protection as is provided for candidate species in BLM Manual 6840.06 E.

Railroad Valley tui chub (*Siphateles bicolor* ssp. 7), a BLM Sensitive species, can be found in Railroad Valley Basin cold springs, and was specifically found in a 2005 survey in Flowing Well #7. NDOW roughly three miles from the proposed pad. NDOW ranks this as a critically imperiled sensitive fish species. **Railroad Valley springfish** (*C. nevadae*), federally and state listed as threatened, occur as isolated, thermal and spring-dependent populations in Railroad Valley, Hot Creek Valley and associated Hot Creek Canyon springs, the nearest location is six miles west. Special status amphibian species such as the **Columbia spotted frog**, **Western toad** and the **Railroad Valley toad** are expected to occur in isolated wetlands throughout Railroad Valley. The nearest spring is Flowing Well # 7 roughly three miles from the proposed pad. For a complete list of Nevada BLM Sensitive Species that have potential to occur in the assessment area see Appendix C.

Migratory Birds

The Migratory Bird Treaty Act (MBTA) of 1918 mandates protection of 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. Measures to prevent bird mortality and potential disturbance of breeding birds or their nests and young must be incorporated into the design of a given project. To comply with the MBTA, BLM recommends that any land clearing or other surface disturbance associated with proposed actions be conducted outside the avian breeding season, which for most songbirds is March 1 – July 31. If land clearing must be conducted during the avian breeding season, a qualified biologist would survey the area prior to land clearing activities. If nests are located, or if other evidence of nesting (i.e., mated pairs, territorial defense, carrying nesting material, transporting of food) is observed, a protective buffer (the size depending on the habitat requirements of the species) should be delineated and the entire area avoided until young fledge or the nest is no longer occupied. If land clearing is not started within 10 days of the survey, then another survey would be needed. Activities may continue within the surveyed area so long as there are no periods longer than 10 days without any activity. Guidance for raptors differs from migratory songbirds in that the nesting season is extended (January 1 – August 31) and the survey area is larger (surveys will be conducted in the project area in addition to a 1 mile buffer surrounding the proposed surface disturbance). This survey buffer may be reduced or altered based on topography and the presence of other physical barriers.

A wide variety of bird species protected by the MBTA are potentially found near the proposed well pad. These include raptors (i.e., hawks, eagles and owls) and many songbirds including, but not limited to, Loggerhead Shrike, Western Meadowlark, Red-winged Blackbird, Marsh Wren, Sage Sparrow and White-crowned Sparrow. Twelve species listed by U.S. Fish and Wildlife Service (USFWS) as Birds of Conservation Concern (BCC) for Great Basin Region 9 have the potential to occur within or near the Project Area, based on their known distribution and habitat associations: Golden Eagle, Snowy Plover, Long-billed Curlew, Calliope Hummingbird, Lewis's Woodpecker, Willow Flycatcher, Loggerhead Shrike, Sage Thrasher, Green-tailed Towhee,

Brewer's Sparrow, Black-chinned Sparrow and Sagebrush Sparrow. Shorebirds such as the Snowy Plover belong to subspecies or populations that are not listed by USFWS as Threatened or Endangered may potentially be found near the proposed project area.

The area surrounding and including the proposed action area is not vegetated and does not provide adequate forage or cover for birds to successfully reside in the location of the project area, and only occasional passes through the area are expected.

Shorebirds, wading birds, and waterfowl species would be expected in ephemeral wetlands near the project area only when adequate water for foraging is seasonally present (normally winter into early spring). The project area itself does not provide habitat for shorebirds, wading birds or waterfowl.

There are very important riparian communities near the area about three miles south (Flowing Well #7). Many songbird species are heavily dependent on healthy riparian systems. Seventy-seven bird species have been identified as either riparian obligate or riparian dependent in the western United States (Rich 2002) and these communities are requisite for a diverse migratory bird community. Both spring areas support populations of migratory birds, and birds traveling between the two spring areas may pass through the project area.

The Bald and Golden Eagle Protection Act (16 U.S.C. 668) applies primarily to taking, hunting and trading activities that involve any bald or golden eagle. The act 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 USFWS has guidance for proposed projects that have the potential to impact eagles or their habitat. Generally, the steps in these guidelines include 1) surveying for nests within an appropriate radius of the project, 2) developing an eagle conservation plan (ECP) in cases where eagles and/or their nests are likely to be impacted, 3) determining if the project has the potential to disturb breeding behavior and 4) determining if the proponents need to apply for a permit to authorize unintentional take.

Golden eagles are widespread year-round residents throughout the Tonopah Field Office area. Golden eagles typically nest on large cliffs and forage on small mammals such as jackrabbits, cottontails and ground squirrels in open shrub, grassland and forested habitats. Bald eagles do not nest in the Tonopah Field Office area, but they do occur during the winter near relatively large open bodies of water.

Although bald and golden eagles have not been documented within the Project Area, they have been observed in other nearby portions of Railroad Valley. The Grant Mountain Range runs north-south approximately six miles east of the project area. This range contains adequate nesting habitat for cliff nesting raptors and eagles. However, the project area does not contain suitable habitat for prey species and would be considered marginal foraging habitat for eagles.

Other Wildlife

The RMP indicates that pronghorn antelope occur in the general area. Mule deer range is identified five miles to the east in the Grant Range. Bighorn sheep year round habitat is identified seven miles east in the Grant Range. Non-game species of amphibians, reptiles, and rodents may be expected in the proposed well pad area.

Environmental Consequences of the Proposed Action on Wildlife, Aquatic/amphibian, and Avian Resources

The Proposed Action has the potential to cause mortality, disturbance and displacement to individual animals; and to affect their habitat within the 340 x 460 foot disturbance boundary until post-project restoration is completed. No population-level effects are anticipated for any species (including migratory birds, eagles, and BLM Sensitive species), for the reasons described below.

It is anticipated that the construction of the access road and drill pad would have no direct effects on the population of the ***Railroad Valley tui chub*** or any amphibian species because the springs are located 3 miles from the proposed drill site. Approximately 11 oil exploration wells have been drilled within 2 miles of the proposed well and there has been no measurable effect on the quality or quantity of water at ***Railroad Valley springfish*** sites.

Ground clearing or other habitat disturbance activities (such as road construction and drill pad construction) will not be conducted during the migratory bird nesting season (roughly, March 1 through July 31) unless a migratory bird survey is conducted. In addition, environmental protection measures noted in Appendix B will be implemented and no effects to special status species or migratory birds are expected to occur as a result of the proposed oil exploration well, pad, or access road.

The removal of approximately 6.2 acres of wildlife habitat would result in a minimal impact to local wildlife populations as the habitat disturbed by project activities would ultimately be reclaimed and would eventually support wildlife in the same manner it does today.

Increased vehicle traffic on roads and highways leading to the project area could cause some wildlife mortalities, particularly to small mammals (including pale kangaroo mouse) that may reside in or around the project area. Collisions with wildlife would be minimized in the project area by the required reduced speeds of travel (25 miles per hour) during project activities.

Fluids produced during drilling would be directed to a fenced reserve pit. The proposed well would include blow-out preventers that are designed to prevent the release of hydrocarbon-contaminated fluids to the environment. During production, if the well is successful, oil and produced fluids would be directed to tanks set within a bermed area. Therefore, there would be minimal potential for wildlife to encounter any hazardous materials during drilling or operations.

Environmental Consequences of the No Action Alternative on Wildlife, Aquatic, Amphibian, and Avian Resources

Under the No Action alternative, there would be no effects to wildlife, aquatic, amphibian, and avian populations or their habitat.

3.3.7. Hazardous or Solid Wastes

Affected Environment

Oil and gas exploration drilling may affect the environment through production of wastes that could be classified as hazardous. These include oil spills, produced waters, drill cuttings and fluids, and other hazardous materials. The following list contains material that may be used while drilling:

Table 3 Potential Hazardous Materials List

Hazardous Material	Purpose
Diesel (4,000 gals)	Fuel
Gasoline (unleaded) (20 gals)	Fuel
Grease (20 tubes)	Equipment Lubrication
Engine oil (110 gals)	Engine lubrication
Ethylene glycol (55 gals)	Engine coolant
Cement (400 sacks)	Cementing casing in hole
Calcium chloride (8 sacks)	Cement additive
Hydraulic fluid (55 gals)	Hydraulic equipment
Acetylene (1-WS bottle)	Fuel for torch
Propane (20 gals)	De-icing of lines and equipment
Methanol (0)	De-icing of gas and water lines
Liquid polymer (1 pallet)	Drilling mud flocculating agent
Bentonite gel (mud program dependent)	Drilling mud viscosity agent
¾ inch bentonite chips (0)	Well plugging
Pipe joint compound (no lead) (0)	Pipe thread lubrication
Pipe thread compound (no lead) (2-5 gal buckets)	Pipe thread sealant

Indirect impacts would include drilling fluid or hydrocarbon spills, leakage from improperly constructed sump ponds or waste water collection systems, improperly handled brine water from drilling and accumulations of solid waste, which could impact water quality or contaminate soils.

Hydrocarbon spills could include hydraulic fluid, gasoline, oil, or grease from vehicles, generators and exploration drill rigs. Brine water from exploration drilling, if improperly disposed, could raise the pH and/or salinity of existing surface waters to unacceptable levels. Generation of nonhazardous solid waste could include small amounts of trash, drill cuttings, wastewater, bentonite and cement generated during drilling operations.

Environmental Consequences of the Proposed Action on Waste, Hazardous and Solid

Some hazardous materials would be used during drilling, completion, and production of the proposed well. The term hazardous materials as used here means any substance, pollutant, or

contaminant (regardless of quantity) listed as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, 42 U.S.C. 9601 et seq., the regulations issued under CERCLA, any hazardous waste as defined in the Resource Conservation and Recovery Act (RCRA) of 1976, as amended, and any nuclear or nuclear byproduct as defined by the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2011 et seq.

The operator or any contractor company working for the operator will have Safety Data Sheets (SDS) available for all chemicals, compounds, or substances that are used during the course of drilling, completion, and production operations of the proposed action. Additionally, all chemicals will be handled in an appropriate manner to minimize the potential for leaks or spills to the environment. Because the project operations would comply with all applicable federal and state laws concerning hazardous materials and the operator's Spill Prevention, Control, and Countermeasure Plan, and NTL-3A Reporting of Undesirable Events, minimal impacts are anticipated.

Environmental Consequences of the No Action Alternative on Hazardous and Solid Waste

Under the No Action alternative, there would be no hazardous or solid waste, and therefore there would be no environmental consequence.

3.3.8. Visual Resources

Affected Environment

The project area is located in a Class IV Visual Resource Management (VRM) area identified in the Tonopah RMP and Record of Decision, dated October 1997. The Class IV objective allows for contrasts that may attract attention and be a dominant feature of the landscape; however, the change should repeat the basic elements inherent in the characteristic landscape.

Environmental Consequences of the Proposed Action on Visual Resources

The visual changes that would result from the Proposed Action are consistent with the objective for VRM Class IV.

The drill rig would be visible and the operation likely noticeable from observation points within 3-5 miles in the foreground-middle ground zone during drilling operations. The drill pad, access road, and ROW would also be discernible as a change in line and color in the foreground. At a short distance, the access road and ROW would fall into the background and at greater distances, the drill rig and drill pad would fall into the background zone and be less discernible due both to distance and the varying patterns of the mountainous background. These effects would be temporary because if production is not achieved the drill rig would be removed after drilling, which is expected to be completed in one to six months, followed by re-contouring and revegetation.

If production is achieved the drill rig could be replaced by production and storage facilities within the 440 feet by 560 feet disturbance boundary; this would result in long-term changes in line but inconspicuous changes in color, because the proponent would paint these facilities with a color selected by BLM to blend with the surroundings (Appendix A). Vehicle travel on the playa surface would be limited to that necessary to construct and reclaim the drill pad; this would limit changes in line that could result from vehicle tracks.

Lighting would follow measures to limit impacts on dark skies (Appendix A).

Environmental Consequences of the No Action Alternative on Visual Resources

Under the No Action alternative, there would be no change to the existing visual environment.

3.3.9. Land Use Authorizations

Affected Environment

Access to the lease boundary is via U.S. Highway 6, approximately 19 miles southwest of Currant, Nevada, to an existing right-of-way (ROW) held by Makoil (N-91244). WGC has applied for a ROW (N-97203) for access to the lease boundary using the existing road. If granted, the ROW will be just over 11 miles in length and 14 feet in width across the entire length with turnouts approximately every mile. The ROW will pass through various ROWs held by others using them for observation/monitoring stations located in T. 8 N., R. 56 E., Sections 32, 33 and T. 7 N., R. 56 E., Sections 4,5, and 8, M.D.M.

There could be occasional use by the public for recreation and for those wishing to cross the Railroad Valley playa at a shorter distance to their destination via the ROW.

Environmental Consequences of the Proposed Action on Land Use Authorizations

Prior to and during drilling, the ROW and access roads will be used repeatedly and vehicle traffic will increase. The roads will be repaired and improved, watered and covered with gravel as needed to decrease premature vehicle degradation and to keep particulates down. In an effort to reduce the disturbance footprint in the vicinity of the existing ROW observation / monitoring stations mentioned above, turnouts in this area would be located where an existing turnout is already located. The turnouts will be built so as not to impair the existing ROW observation / monitoring stations mentioned above (Figure 8).

Environmental Consequences of the No Action Alternative on Land Use Authorizations

If the APD was not approved, there would not be the need for the ROW to the lease boundary. The ROW access road would not be repaired, improved, watered or covered with gravel. The turnouts would not be built. There would be no change to land use authorizations under the No Action Alternative as the proposed drill pad and access road would not be constructed.

4. Cumulative Effects

The Council on Environmental Quality (CEQ) regulations for implementing NEPA (40 CFR 1508.7) define cumulative impacts as:

“...the impact on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.”

4.1. Introduction and assumptions

The following analysis identifies past, present, or reasonably foreseeable future actions which, together with the proposed project, may incrementally impact the environment. In order to provide structure to the analysis, a geographic scope and a timeframe were established. To be cumulative, effects must overlap in both time and place.

4.2. Cumulative effects study area and timeframe

The geographic scope of the cumulative effect study area (CESA) is the playa boundary and a one mile buffer around the ROW used to access the playa. The total area within the CESA is approximately 67,984 acres surrounding the Project Area. This CESA was selected because it represents the maximum spatial extent of effects that could overlap in space and time with those of the Proposed Action.

A 10-year timeframe, both in the past and into the future, was selected for the analysis. This timeframe for considering cumulative effects was selected because it represents the maximum amount of time that effects associated with the Proposed Action are likely to persist.

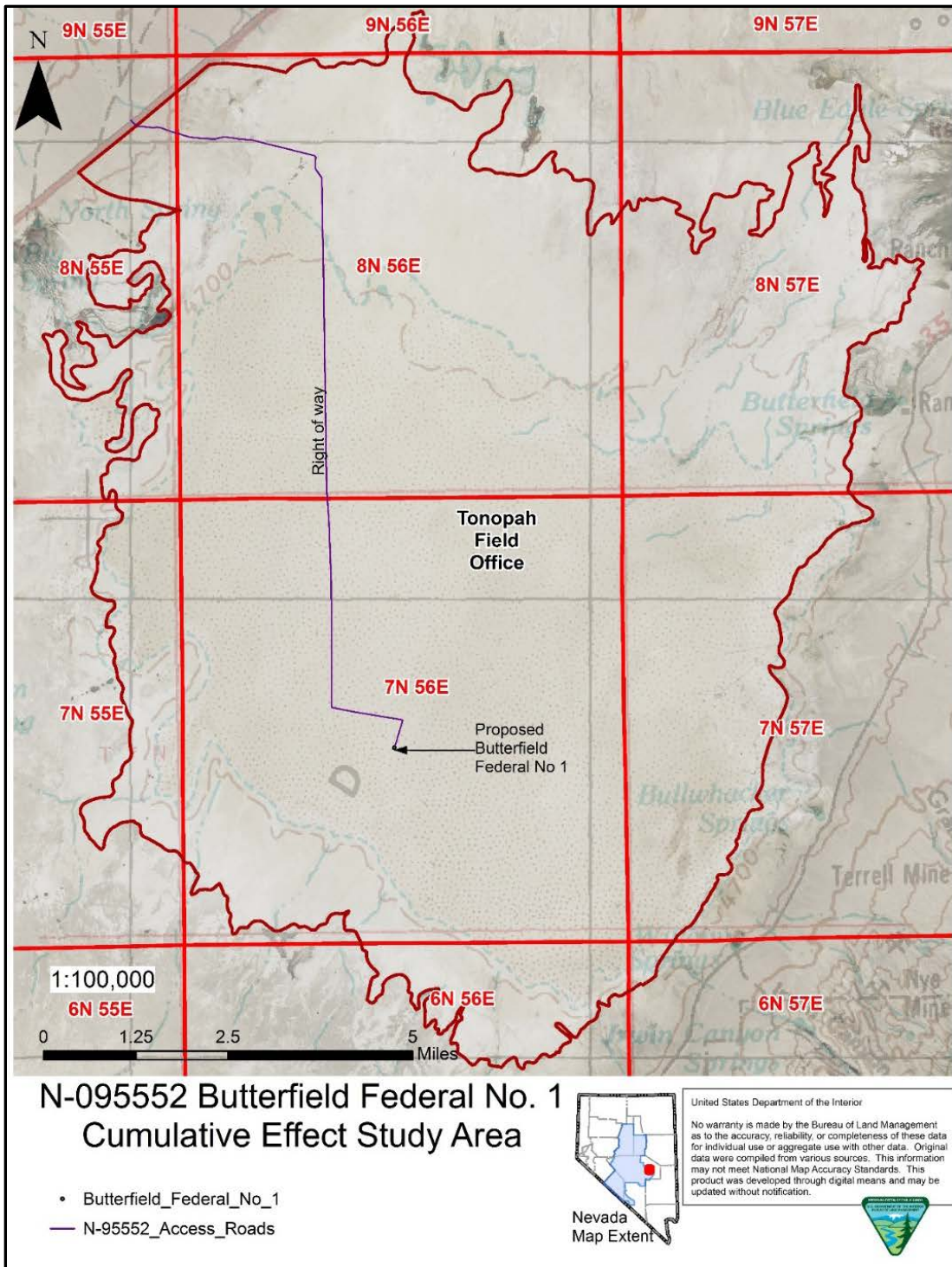


Figure 6 Cumulative Effect Study Area (CESA)

4.3. Past, Present, and Reasonably Foreseeable Future Actions (RFFAs)

Past and Present Oil and Gas Development

There are 25 active oil and gas lease parcels inside the CESA boundary; however, oil and gas leasing does not directly contribute to surface disturbance and direct effects are analyzed at the project, or exploration, stage. Leases are sold at competitive lease sales and during a two-year window after each sale, thus leases may be sold, expire, be cancelled or forfeited at any time, with or without actions taken during the term of a lease. The number of leases held in the CESA area have and will continue to vary over time.

In the past five years one exploration oil well APD was processed by BLM inside the CESA boundary. This well was analyzed under environmental assessment DOI-BLM-NV-B020-2016-0015-EA; however, the well was never drilled and the lease has since expired. Exploration wells that are drilled and do not produce oil are cemented with dry hole markers that indicate the well name and location. Based on Nevada Division of Minerals (NDOM) data, there are 25 plugged and abandoned wells inside the CESA boundary; however, well pads may be constructed and not used. There are seven active production wells inside the CESA boundary. Active production oil wells, including those wells that are shut-in or used as injection wells. There is one active tank battery (Figure 7).

Using satellite imagery, as many as 58 well pads were constructed, including those currently in use, for exploration or production, within the CESA boundary. The average disturbance for each well pad is 1.2 acres (72 acres total, including tanks, piping, and turnouts). Major roads, including existing ROWs used to access the well pads, transmission lines, and pipelines, inside the CESA, as observed through satellite imagery is estimated to be 53 miles (77 acres). Access roads that use the major roads to access well pads were measured to be 8 miles in length (10 acres). Thus within the CESA, a total of 159 acres of disturbance is present, the majority of which has been reclaimed. This total represents 0.2 percent of the CESA area. The proposed action will contribute 6.2 acres to well pad disturbance within the CESA and the ROW disturbance is already estimated in the above major road disturbance above.

Reasonably Foreseeable Future Development

The 1997 Tonopah RMP assumes that 49 additional wells from existing fields would result in 131 acres of new disturbance and additional development in two new oil fields could result in a total of 102 wells drilled and total disturbance of 370 acres. In total, the 1997 RFD projected total future disturbance of 944 acres for these wells, roads, and infrastructure. This approach vastly overestimated the number of wells eventually developed since the RMP was approved, showing that it can be difficult predict with certainty how resource development will occur in the future. In comparison a total of 68 exploration and production wells were authorized; 22 of these authorizations expired without an exploration well being drilled, 38 were drilled, then plugged

and abandoned, six wells are shut in or producing, and two may be drilled in the future.

Conservatively, based on historic information and anticipated activity, approximately 10 wells would be drilled and the average amount of surface disturbance associated with these wells (well pads, access roads, service roads, pipelines) is estimated to be between 4 to 10 acres per well or between 40 to 100 acres of surface disturbance overall in the next ten years.

Other Activities in the Project Area

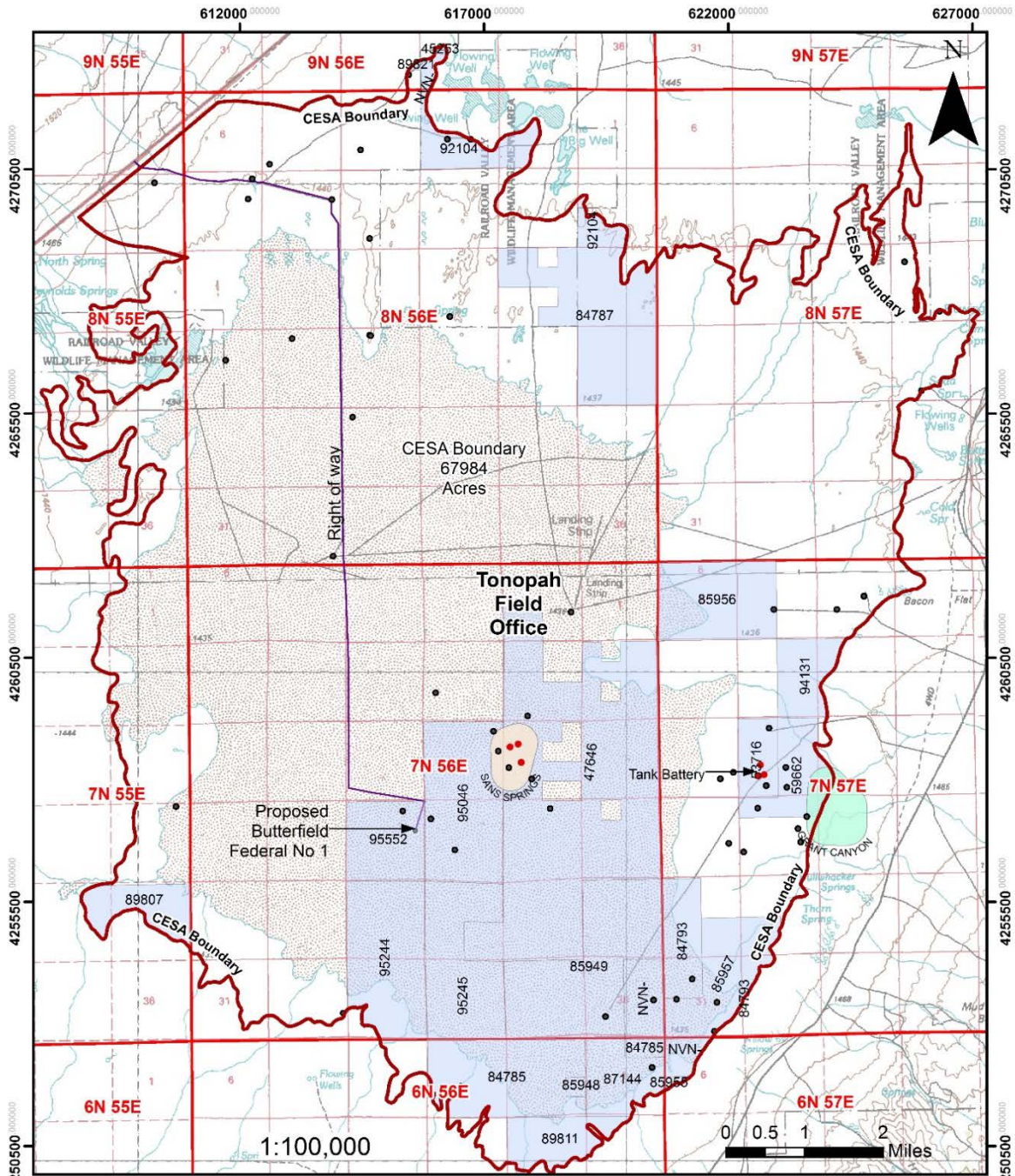
Along with oil and gas development, other past, present, and reasonably foreseeable actions in the project area include livestock grazing, and locatable mineral exploration (primarily lithium).

4.3.1. Cumulative Impacts to Air Quality

Past, continued, proposed and foreseeable road, power line, and pipeline construction, and minerals exploration all create air quality impacts. Increased volumes of carbon dioxide, carbon monoxide, and particulates have been and would be caused by vehicle exhaust. Additionally, fugitive dust will be produced by disturbing the soil cover from additional travel on existing dirt roads and the construction of new access roads and well pads. Activities associated with oil and gas drilling usually last less than six months and the potential to increase particulate matter from multiple trips across the proposed project surface area is mitigated by placing gravel on the access road and the well pad. These localized, temporary impacts are not expected to create a significant cumulative effect on air quality in the area or exceed air quality standards.

4.3.2. Cumulative Impacts to Cultural Resources

No historic properties are located within the Proposed Action as discussed in Chapter 3. As such, a CESA for cultural resources is not established and past, present, and reasonably foreseeable future actions within the Proposed Action area would not contribute to any direct or indirect cumulative effect to cultural resources.



N-9552 Butterfield Federal No. 1
Cumulative Effect Study Area

- ActiveParcles
- Oil Fields
- GRANT CANYON
- SANS SPRINGS
- Wells_P&A
- Wells_Open



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Figure 7 Oil and Gas Development inside the CESA boundary

4.3.3. Cumulative Impacts to Floodplains

Past, present and reasonably foreseeable grazing activity has contributed and will contribute little to cumulative impacts to the floodplain since there is little to no forage on the playa and adjacent areas of the allotments to attract cattle. While cattle may use the floodplain as a water source during certain times of the year, which may create minor disturbance to surface soils, these impacts would not be cumulative with impacts from past, present and reasonably foreseeable future actions because the impacts would be seasonal and temporary.

Ongoing and reasonably foreseeable future oil exploration under current permits is expected to result in a total of 40-100 acres of disturbance to the Railroad Valley's seasonally-flooded areas, parts of which are within a FEMA-designated 100-year flood zone. Disturbed areas that are graveled as part of access road and well pad construction, have the potential for damming but will be reclaimed after the projects are completed.

The Proposed Action would result in 6.2 acres of disturbance associated with the proposed well pad construction which would be cumulative with the 40-100 acres associated with currently permitted oil exploration. These areas would also be graveled, which would increase the potential for damming in this area. The cumulative effect would be temporary, however, because all well pads and access roads would be reclaimed,

4.3.4. Cumulative Impacts to Soils

Past, present and reasonably foreseeable grazing activity has resulted in localized areas of soil disturbance and compaction where cattle congregate, such as trails, trough locations, springs and salting grounds. Transporting heavy equipment, like oil drilling rigs into the project area requires a solid road base. Therefore, all previous drilling has been done on roads and drill pads created with solid gravel bases. Providing additional access for the proposed well and additional exploratory drilling would cause increased erosion of the soil while the roads and pads are being constructed. However, the erosion would be mitigated by placing a layer of gravel onto the newly created access roads to provide a satisfactory surface for vehicles to travel and transport the drill rig. By building exploration or production well drill pads as small as practicable, the impacts to soils would also be reduced.

Oil exploration has resulted in similar impacts to those of livestock grazing, but localized in the areas of well pads and roads. These impacts have increased wind and water erosion potential in these areas. However, due to the localized nature of oil exploration and of livestock areas of congregation, these impacts are limited to relatively few intensively impacted areas within the CESA. Since cattle tend to congregate habitually in the same areas it is likely that the areas that have been impacted by cattle in the past will be repeatedly impacted into the foreseeable future.

As described in the Soils section of Chapter 3, the Proposed Action would temporarily disturb 6.2 acres of surface soils due to well pad construction, increasing erosion potential in these areas.

Once reclamation and seeding are completed, the project area should return to a natural condition, which could take several years.

Taken together, the cumulative impact to soils associated with past, present and reasonably foreseeable future actions have been minor. Although there are some localized areas of increased erosion potential and compaction, the intensity of the impact has been, and would remain, very low because so few acres have been impacted relative to the size of the CESA.

4.3.5. Cumulative Impacts to Water (Surface and Ground), Wetlands, Riparian Resources

Past, present and reasonably foreseeable grazing activity has resulted in localized areas of wetland and riparian disturbances where cattle water and graze, creating trails and compressed soils, leading to localized impacts. Oil exploration has resulted in minor impacts to local water sources in Railroad Valley. These impacts are localized depending on water source. Sources of water can be directly related to wetland and riparian resources; however, this APD utilizes an underground source, temporarily; thus no impacts to wetland and riparian areas are expected within the CESA.

4.3.6. Cumulative Impacts to Wildlife, Aquatic/Amphibious, and Avian Resources

Special Status Species

Railroad Valley springfish, a federally-listed threatened and endangered species is known to occur within the CESA. In addition, suitable habitat for some listed or sensitive species is known to occur within the area. Some species of sensitive bats may also forage over the project area, but no roosting habitat has been identified in the CESA. It is unlikely that past, present, proposed and reasonably foreseeable future activities would disturb potential habitat for listed or sensitive species because development near habitat is protected through EPMs and existing laws. Any future potential development project on public land would be subject to site specific environmental analysis, including an assessment of the potential presence of threatened, endangered, candidate or sensitive species, and suitable habitat for those species.

Migratory Birds and Eagles

The proposed action would result in 6.2 acres of temporary surface disturbance; however, this site does not present migratory bird nesting habitat or forage. Localized effects are not expected to adversely affect populations of common migratory bird species and disruption of active nests of any migratory bird species would not occur. Potential impacts would be reduced based on the environmental protection measures outlined in Appendix C, specifically, requirements for nesting surveys prior to disturbance during the nesting season and restrictions on disturbance within a buffer around any active nests. When combined with past, present, and reasonably

foreseeable future actions, and incorporating the environmental protection measures, there is no significant cumulative impacts to migratory birds.

Wildlife

Construction of the access road and drill pad and increased vehicular traffic in the vicinity of an active drilling operation could temporarily impede the passage of a variety of wildlife that may pass through the area. However, reclamation of disturbed areas would eliminate any long-term impact to wildlife. Speed limits set in the project area would help to reduce potential impacts to wildlife during the life of the project. Therefore, the incremental impacts from the proposed action when compared to the overall assessment area, combined with past, present, and reasonably foreseeable future actions, and with the incorporation of environmental protection measures, are expected to be minimal.

Past, present, and reasonably foreseeable present grazing activity has contributed and will contribute little to cumulative effects on wildlife, including special status species, because the CESA provides only marginal habitat for these species and little to no forage for cattle. While shorebirds, wading birds, and waterfowl species may be disturbed by cattle attracted to standing water, the effect would be seasonal and short-term, not cumulative. The CESA provides only marginal foraging habitat for bald and golden eagles and grazing activity is not likely to contribute to cumulative effects.

Currently permitted oil exploration activity has the potential to disturb 40-100 acres of marginal special status species habitat and the Proposed Action would disturb another 6.2 acres. Given the marginal nature of the habitat, these activities have contributed and, together with the Proposed Action, would contribute little to the cumulative effect to wildlife including special status animal species.

Since there is little to no forage within the CESA and abundant forage outside the CESA boundaries, impacts associated with past, present and reasonably foreseeable grazing activity would be very minor because there would be little competition for forage within the CESA.

Given its isolated and usually temporary nature, past, present and reasonably foreseeable oil exploration activity, including the Proposed Action, has not contributed and would not contribute in any substantial way to cumulative impacts to wildlife. Construction of access roads and drill pads and increased vehicular traffic in the vicinity of an active drilling operation could temporarily impede the passage of a variety of wildlife that may pass through the area, and some mortality may occur. However, the usually short duration of these activities, both past and proposed, and subsequent reclamation of disturbed areas would eliminate any long-term impact to wildlife.

4.3.7. Cumulative Impacts to Hazardous and Solid Wastes

Past, present and reasonably foreseeable oil and gas development has resulted in localized areas

of surface disturbances, 159 acres to date and potentially, 40 to 100 acres more. Prevention measures are implemented through spill prevention plans, EPMs, SOPs, and BMPs to minimize potential impacts. Operators are obligated to follow all applicable federal and state laws concerning hazardous materials and solid waste management. Ultimate relief from past liability further warrants that operators clean and return sites to prior state; thus cumulative impacts are minimal to negligible.

4.3.8. Cumulative Impacts to Visual Resources

Past, present and reasonably foreseeable grazing activity has resulted in few impacts to visual resources because areas of intensive grazing activity rarely, if ever, occur in the CESA.

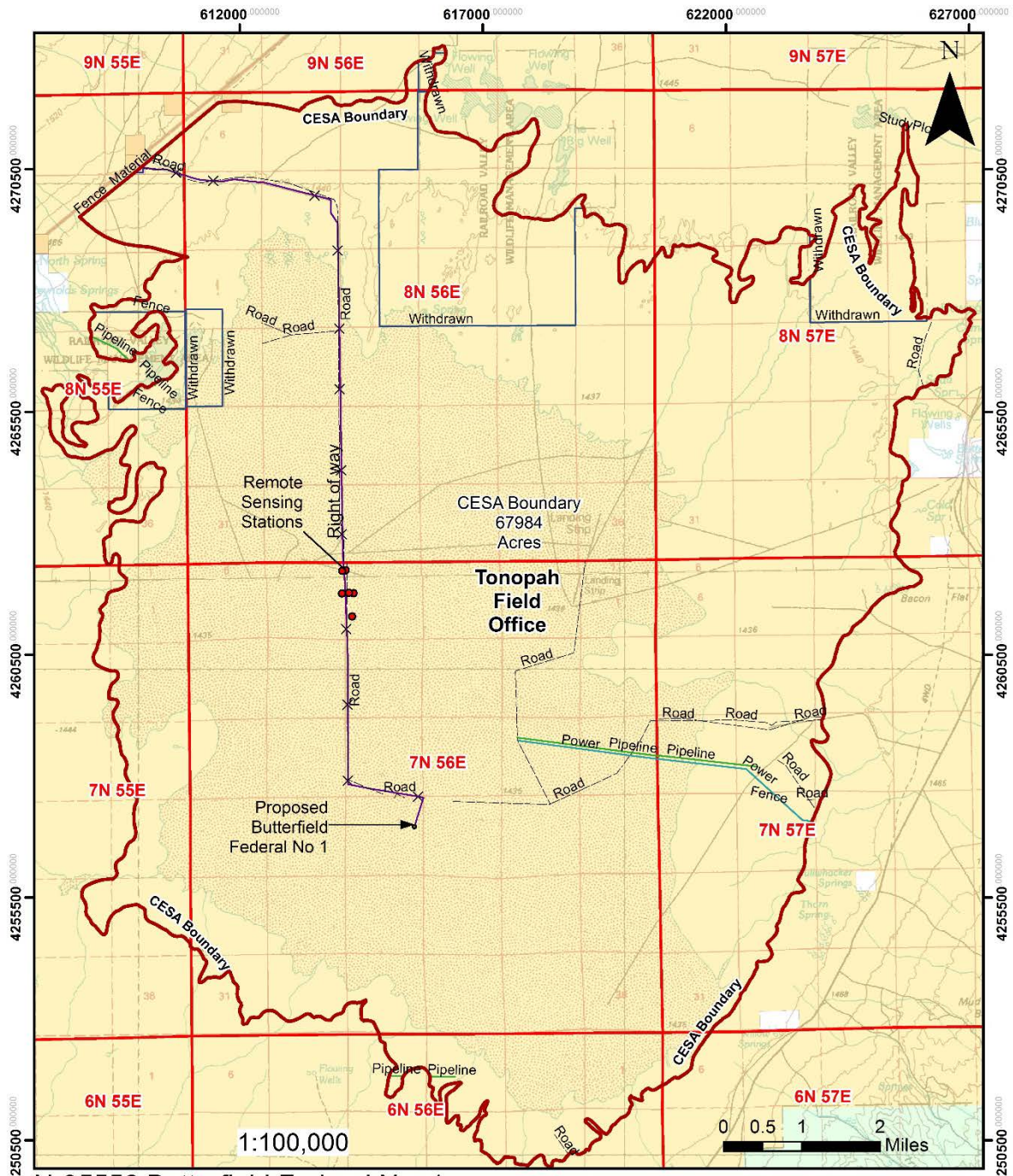
Past, present and reasonably foreseeable oil and gas development creates short term effects to the visual resources; however, the proposed project is within a Class IV VRM area and the proposed drilling would still meet the objectives of this class. By building exploration or production well drill pads as small as practicable, the impacts to local visual resources would be reduced. If the well is not a producer, a 6-foot-high dry hole marker would be located on the wellhead that could be visible up to 1,000 feet away.

Currently permitted oil and gas developments have resulted in 159 acres of disturbance within the CESA. Visual effects similar to those of the Proposed Action are temporary in nature. More permanent oil wells, tanks, pipelines, and transmission lines are required to be painted to match the visual background. These impacts would be consistent with the VRM IV designation throughout the CESA.

4.3.9. Cumulative Impacts to Land Use Authorizations

If the proposed well produces oil, additional roads, pipelines, and electrical power lines may be needed to provide access for oil production, additional exploration drilling, and associated construction activities in the area. The existing gravel roads would be the main ingress and egress for these activities. It is possible that more road rights-of-way would be needed for exploration activities. Roads utilized for access would need to be compliant with the BLM regulations and road specifications (9113 BLM Roads Manual) and would be analyzed in site specific environmental analyses.

Cumulatively, oil and gas developments have resulted in 159 acres of disturbance and potentially 40 to 100 acres in the next 10 years. A portion of this would be attributable to land use authorizations.



**N-9552 Butterfield Federal No. 1
Cumulative Effect Study Area**

- | | |
|---------------------------|---------------------------|
| Bureau of Land Management | pipeline |
| Forest Service | road |
| Private | study plot |
| Turnouts | transmission line |
| material site | withdrawal class reserves |



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Figure 8 Land use authorizations within the CESA boundary.

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Air Quality	Craig Nicholls
Water Resources	Melissa Jennings / Justin Ferris
Wildlife Resources and Special Status Species	Brandon Crosby
NEPA compliance	Melissa Jennings

Appendix A: Environmental Protection Measures

Construction and reclamation standards

Any authorized construction and reclamation is to be consistent with the Gold Book (2007 ed.) and BLM Manual 9113 (Engineering Road Standards).

Livestock and wildlife, including migratory birds and other protected species

The operator would notify the Bureau of Land Management (BLM) Authorized Officer (AO) and nearest Fish and Wildlife Service (USFWS) Law Enforcement office within 24 hours, if the operator discovers a dead or injured federally protected species (i.e., migratory bird species, bald or golden eagle, or species listed by the FWS as threatened or endangered) in or adjacent to a pit, trench, tank, exhaust stack, or fence. (If the operator is unable to contact the FWS Law Enforcement office, the operator must contact the nearest FWS Ecological Services office.)

Impacts to sensitive and migratory bird species would be reduced or eliminated by one of the following environmental protection measures:

1. Construction or other ground disturbing activities would be limited to August 1 through February 29, *or*
2. If construction or other ground disturbing activities would occur during March 1 to July 31, a survey for all migratory bird species, including the snowy plover and burrowing owl, would be required to be completed by a certified wildlife biologist (approved by the BLM) prior to ground disturbing activities. If active migratory bird nests were found, avoidance of the nest location with a 300-foot radius buffer during construction would be required.

Impacts to eagles would be reduced or eliminated by one of the following environmental protection measures:

1. Construction or other ground disturbing activities would be limited to September 1 through December 31, *or*
2. If construction or other ground disturbing activities would occur during January 1 to August 31, a survey for eagles would be required within a 5-mile radius of the project area, and an eagle conservation plan (ECP) would be required in cases where eagles and/or their nests are likely to be impacted. A certified wildlife biologist (approved by the BLM) would determine if the project has the potential to disturb breeding behavior and if the proponents need to apply for a permit to authorize unintentional take.

The operator would minimize or preclude releases of oil into open pits. Unless the AO approves the release, no oil should go into a pit except in an emergency. The operator must remove any accumulation of oil or condensate in a pit within 48 hours of discovery.

The operator would design, construct, and maintain enclosure fencing for all open cellars and pits containing freestanding fluids to prevent access by livestock and large forms of wildlife such as deer, elk, and pronghorn. At a minimum, the operator would adequately fence all fluids pits and open cellars during and after drilling operations until the pit is free of fluids and the operator initiates backfilling. The operator would maintain the fence in order to protect public health and safety, wildlife, and livestock.

Adequate fencing includes all of the following:

- a. Construction materials would consist of steel and/or wood posts. Use a fence with five separate wires (smooth or barbed) or hog panel (16-foot length by 50-inch height) with connectors such as fence staples, quick-connect clips, hog rings, hose clamps, twisted wire, etc. Do not use electric fences.
- b. Set posts firmly in the ground. Stretch the wire, if used, tightly and space it evenly, from the ground level to the top wire, effectively keeping out animals. Tie hog panels securely into posts and to one another using fence staples, clamps, etc. Construct the fence at least 2 feet from the edge of the pit.
- c. Reserve pits shall be fenced on three sides during drilling. Upon completion of the well, when the site is not occupied, the fourth side of the pit shall be fenced. The pit shall remain fenced until reclaimed
- d. Maintain the erect fences in adequate condition until the pit has been closed.

The operator would prevent wildlife and livestock access (including avian wildlife) to fluids pits that contain or have the potential of containing salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, surfactants, or Resource Conservation and Recovery Act-exempt hazardous substances. At a minimum, the operator would install approved netting in these circumstances, in accordance with the requirements below, immediately following release of the drilling rig. Refer to: <http://www.fws.gov/mountain-prairie/contaminants/contaminants1c.html>.

Note: The BLM does not approve of the use of flagging, strobe lights, metal reflectors, or noisemakers as techniques for deterring wildlife.

Minimum Netting Requirements: The operator would:

- a. Construct a rigid structure made of steel tubing or wooden posts with cable strung across the pit at no more than 7-foot intervals along the X- and Y-axes to form a grid of 7-foot squares.
- b. Suspend netting a minimum of 4 to 5 feet above the pit surface.
- c. Use a maximum netting mesh size of 1½ inches to allow for snow loading while excluding most birds in accordance with USFWS recommendations.
- d. Cover the top and sides of the netting support frame with netting and secure the netting at the ground surface around the entire pit to prevent wildlife entry at the netting edges.

Note: Hog wire panels or other wire mesh panels or fencing used on the sides of the netting support frame is ineffective in excluding small wildlife and songbirds unless covered by smaller meshed netting.

- e. Monitor and maintain the netting sufficiently to ensure the netting is functioning as intended, has not entrapped wildlife, and is free of holes and gaps greater than 1½ inches.

The operator would construct and maintain pits, cellars, open-top tanks, and trenches, that are not otherwise fenced, screened, or netted, to exclude livestock, wildlife, and humans (for example, lined, clean water pits; well cellars; or utility trenches) to prevent livestock, wildlife, and humans from becoming entrapped. At a minimum, the operator would construct and maintain escape ramps, ladders, or other methods of avian and terrestrial wildlife escape in pits, cellars, open-top tanks, or at frequent intervals along trenches where entrapment hazards may exist.

Immediately following active drilling or completion operations, the operator would take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock; hydrocarbons; or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator would net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator would cover and secure the open portion of the tank to prevent wildlife entry. The operator would net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock.

Cultural resources

Any cultural or paleontological resource (historic or prehistoric site or object) or Native American human remains, funerary item, sacred object, or objects of cultural patrimony discovered by the permit holder, or any person working on their behalf, during the course of the road and pad construction shall be immediately reported to the AO by telephone, with written confirmation. The permit holder shall suspend all operations in the immediate area of such discovery and protect it until an evaluation of the discovery is made by the AO.

For cultural resources other than Native American human remains, funerary item, sacred object, or objects of cultural patrimony, this evaluation will determine the significance of the discovery and what environmental protection measures are necessary to allow activities to proceed. The permit holder is responsible for the cost of evaluation and mitigation. Any decision on treatment and/or mitigation will be made by the AO after consulting with the permit holder. Operations may resume only upon written authorization to proceed from the AO.

Soils reclamation

Upon the proper plugging and abandonment of the well, the proponent would remove as much gravel as practicable from the proposed well pad and scarify the area.

If the gravel to construct the proposed drill pad is removed from a nearby abandoned well site and access road, the previously disturbed site would be scarified prior to vacating the site.

Visual resources

To mitigate the effects to visual resources if production is obtained, the proponent would paint the production and storage facilities with Covert Green or Sand Beige paint if the well produces oil (additional environmental analysis would be required if production and/or storage facilities are necessary and exceed the 240 feet x 360 feet disturbance boundary, plus 100 feet buffer).

Limit vehicle travel on the playa surface to that necessary to construct and reclaim the drill pad.

Utilize consistent lighting mitigation measures that follow “Dark Sky” lighting practices. Effective lighting should have screens that do not allow the bulb to shine up or out. All proposed lighting shall be located to avoid light pollution onto any adjacent lands as viewed from a distance. All lighting fixtures shall be hooded and shielded, face downward, located within soffits and directed on to the pertinent site only, and away from adjacent parcels or areas.

Utilize consistent mitigation measures that address logical placement of improvements and use of appropriate screening and structure colors. Existing utility corridors, roads and areas of disturbed land should be utilized wherever possible. Proliferation of new roads should be avoided. For example, the use of compatible paint colors on structures reduces the visual impacts of the built environment. Using screening, careful site placement, and cognitive use of earth-tone colors/materials that match the environment improve the user experience for others who might have different values than what is fostered by built environment activities.

Any required FAA lighting should be consolidated and minimized wherever possible.

Flood protection

The operator would construct and maintain flood protection to the 100-year flood level for the pad, reserve pit, open top, tanks and associated structures. In areas identified as 100-year flood plain and playa, the operator will obtain a flood damage prevention permit from Nye County.

Water quality

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.

Onshore Order No. 2 and 43CFR §3162.5-2: The operator shall isolate freshwater-bearing and other usable water containing 5,000 ppm or less of dissolved solids and other mineral-bearing formations and protect them from contamination. Tests and surveys of the effectiveness of such measures shall be conducted by the operator using procedures and practices approved or prescribed by the AO.

Due to the shallow water table, BLM requires the reserve pit be lined with an impermeable membrane such as HDPE or bentonite, to prevent contamination of the aquifer.

Other approval, testing, and reporting requirements

A Tonopah Field Office AO shall be contacted for a verbal approval prior to commencing remedial work, plugging operations on newly drilled boreholes, changes within the drilling plan, changes or variances to the blowout preventer equipment (BOPE), deviating from conditions of approval, and conducting other operations not specified within the APD. The contact number for the AO (Field Manager) is 775-482-7800 for verbal approvals. The secondary contact is the Assistant Field Manager for Non-Renewable Resources, at 775-482-7800.

If after drilling of the well is completed hydraulic fracturing is proposed, prior approval and further NEPA analysis will be needed.

Any well control issues shall be addressed according to the terms of Onshore Order #1, #2, and 43CFR §3162.5-2.

The BOPE shall be installed, tested and operated in conformance with Order #2.

Ram type preventers and associated equipment shall be tested to approved stack working pressure if isolated by test plug or to 70 percent of internal yield pressure of casing if BOP stack is not isolated from casing (see item I.D.1. of Onshore Order # 2). Pressure shall be maintained for at least 10 minutes or until requirements of test are met, whichever is longer. If a test plug is utilized, no bleed-off of pressure is acceptable. **For a test not utilizing a test plug, if a decline in pressure of more than 10 percent in 30 minutes occurs**, the test shall be considered to have failed. Valve on casing head below test plug shall be open during test of BOP stack.

Annular type preventers shall be tested to 50 percent of rated working pressure. Pressure shall be maintained at least 10 minutes or until provisions of test are met, whichever is longer.

Prior approval will be required if the operator drills beyond the depth indicated in the APD.

If the well is productive and it is determined that the reservoir extends beyond the lease boundary a Communization Agreement may be set up.

After running and cementing the production casing and in order to determine cement top and quality, a cement bond log, cement evaluation tool, or equivalent shall be run. Results will be reported to BLM, Attn: Tonopah Field Office. Any necessary remedial operations will be conducted prior to drilling out of the casing shoe.

The operator shall submit the (a) mud/drilling log (e.g. Pason disc), (b) driller's event log/operations summary report, (c) production test volumes, (d) directional survey, and (e) Formation Integrity Test (FIT) results with the well completion report. Please contact the AO for clarification.

In accordance with 43 CFR 3162.4(b), the operator shall submit a complete set of electrical/mechanical logs in .LAS format or hard copies with standard Form 3160-4, Form 3260-4 Well Completion or Recompletion Report and Log. Please contact John Menghini at 775-861-6573 if there are any questions.

Two copies of all logs, and a single copy of core descriptions, core analyses, drill stem tests, well-test data, geologic summaries, sample descriptions, and all other surveys or data obtained and compiled during the drilling and/or completion operations shall be submitted to the BLM, Tonopah Field Office.

Daily drilling and completion progress reports shall be submitted to the BLM, Nevada State Office and Tonopah Field Office on a daily basis, and shall include daily mud reports, details of casing that has been run and its cementing, water flows, lost circulation zones, hydrocarbon shows and other information that describes drilling conditions.

A formation integrity test shall be performed at the surface casing shoe. Prior to drilling more than 20 feet below the shoe, the test shall expose the shoe to the minimum mud weight equivalent necessary to control anticipated pressure at the next casing point or total depth.

Gamma Ray Log shall be run from total depth to surface.

All cement bond logs shall be run by the logging company at zero pressure. Logs determined to be run under pressure shall be re-run.

Nevada State Office personnel shall be contacted for approval prior to running non-API (American Petroleum Institute) Standard casing downhole. Please contact John Menghini at 775-861-6573 with the specifications and manufacturer of the pipe, and a decision will be made whether the pipe can be used.

Prior to running used or reconditioned API-grade casing downhole, a petroleum engineer in the Nevada State Office shall be contacted to obtain approval. Approval will be granted if the pipe has been tested and shown to have retained 87% (or greater) of its original wall thickness.

Appendix B: Standard Operating Procedures

1. The operator shall obtain and maintain all necessary State of Nevada permits as well as local permits applicable to drilling the well.
2. The operator shall follow all applicable state and federal laws.
3. The operator shall stockpile a volume equivalent to at least 6 inches of topsoil from the pad and reserve pit for use in reclamation.
4. The operator shall be responsible for the control and eradication of weeds within the Project Area in accordance with the Battle Mountain Integrated Weed Management Plan (NV062EA08-075).
5. Maximum width of any road, including drainage ditches and berms, is 30 feet. Culverts and turnouts may be installed if deemed necessary by the Field Manager, Tonopah Field Office.
6. A 25-mph speed limit shall be required for all project vehicles on the project site and unposted access roads.
7. Water shall be the exclusive means to control dust; no dust palliatives shall be used.
8. The mud pit shall be fenced on three sides during drilling. Upon completion of the well, when the site is not occupied, the fourth side of the pit shall be fenced. The pit shall remain fenced until reclaimed (see Appendix A).
9. Trash shall be contained on-site and hauled to an approved landfill. Burial of trash on-site is not permitted.
10. Portable toilets shall be used for human waste. The latter may not be chemically treated or buried on site.
11. Any additives to the drilling mud that are considered hazardous substances will be stored in appropriate containment to prevent site contamination.
12. Upon abandonment, the operator shall:
 - Remove all trash and debris from the site and dispose of it properly.
 - Re-contour the mud pit to as near original grade as possible, and spread stockpiled topsoil over the covered pit.
 - Remove any culverts installed.
 - Rehabilitate the drill pad by stripping as much gravel as possible from the pad and re-contouring. The operator shall also reduce the berm and cover any remaining gravel with the soil from the pad and mud pit excavation. The drill pad will be scarified and re-seeded with the BLM recommended seed mix.

- Reclaim existing roads that are improved to their original condition by removing turnout improvements. Imported gravel at the turnouts will be removed to restore the original playa surface.
13. Interim reclamation of the drill pad and mud pit, reducing the surface disturbance to the minimum area required to place a workover rig on the site, will be required within 1 year if the well is a producer.
 14. All reclamation of the disturbed areas shall be completed within one (1) year from the date of the proper plugging and abandonment of the well.
 15. The AO of the Bureau of Land Management shall be notified in writing when reclamation operations commence and when reclamation is completed and shall accept the reclamation in writing.

Appendix C: Special Status Species List

All species listed here are Nevada BLM Sensitive Species as designated by the State Director, and are identified on the State Director’s list as occurring in the Battle Mountain District, as of October 1, 2017. Criteria set forth in the BLM 6840 Manual for designating sensitive species are:

1. Species designated as Bureau sensitive must be native species found on BLM administrated lands for which BLM has the capability to significantly affect the conservation status of the species through management, and either:
 - a. There is information that a species has recently undergone, is undergoing, or is predicted to undergo a downward trend such that the viability of the species or a distinct population segment of the species is at risk across all or a significant portion of the species range, or
 - b. The species depends on ecological refugia or specialized or unique habitats on BLM-administrated lands, and there is evidence that such areas are threatened with alteration such that the continued viability of the species in that area would be at risk.
2. All federally designated candidate species, proposed species, and delisted species in the 5 years following their delisting shall be conserved as Bureau sensitive species.

Species listed by U.S. Fish and Wildlife Service under the Endangered Species Act are identified in the first part of the table below (all are also Nevada BLM Sensitive species).

Battle Mountain District <i>Endangered and Threatened</i> Species List		
Plants Common Name(4)	Scientific Name	Federal Status
Spring-loving centaury	<i>Centarium namophilum</i>	Threatened
Ash Meadows mousetails	<i>Ivesia kingii var. eremica</i>	Threatened
Armagosa niterwort	<i>Nitrophila mohavensis</i>	Endangered
Whitebark pine	<i>Pinus albicaulis</i>	Candidate
Bird Common Name (3)	Scientific Name	Federal Status
Western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	Threatened
Southwestern willow flycatcher	<i>Empidonax trailii extimus</i>	Endangered
Ridgway’s rail (Yuma clapper rail)	<i>Rallus obsoletus yumanensis</i>	Endangered
Reptile Common Name (1)	Scientific Name	Federal Status
Desert Tortoise	<i>Gopherus agassizii</i>	Threatened
Fish Common Name (2)	Scientific Name	Federal Status
Railroad Valley springfish	<i>Crenichthys nevadae</i>	Threatened
Lahontan cutthroat trout	<i>Oncorhynchus clarkii henshawi</i>	Threatened

Battle Mountain District <i>Special Status</i> Plant Species List (32)	
Common Name	Scientific Name
Eastwood milkweed	<i>Asclepias eastwoodiana</i>
Cima milkvetch	<i>Astragalus cimae</i> var. <i>cimae</i>
Tonopah milkvetch	<i>Astragalus pseudodanthus</i>
Toquima milkvetch	<i>Astragalus toquimanus</i>
Currant milkvetch	<i>Astragalus uncialis</i>
Elko rockcress	<i>Boechera falcifruca</i>
Monte Neva paintbrush	<i>Castilleja salsuginosa</i>
Tecopa birdbeak	<i>Cordylanthus tecopensis</i>
Mojave (Virgin River) thistle	<i>Cirsium mohavense</i> (<i>C. virginense</i>)
Goodrich biscuitroot	<i>Cymopterus goodrichii</i>
Nevada willowherb	<i>Epilobium nevadense</i>
Windloving buckwheat	<i>Eriogonum anemophilum</i>
Beatley buckwheat	<i>Eriogonum beatleyae</i>
Deeth buckwheat	<i>Eriogonum nutans</i> var. <i>glabratum</i>
Tiehm buckwheat	<i>Eriogonum tiehmii</i>
Sand cholla	<i>Grusonia pulchella</i>
Alkali ivesia	<i>Ivesia kingii</i> var. <i>kingii</i>
Lunar Crater buckwheat	<i>Johanneshowellia crateriorum</i>
Davis peppercress	<i>Lepidium davisii</i>
Holmgren lupine	<i>Lupinus holmgrenianus</i>
Low feverfew	<i>Parthenium ligulatum</i>
Pahute Mesa beardtongue	<i>Penstemon pahutensis</i>
Lahontan beardtongue	<i>Penstemon palmeri</i> var. <i>macranthus</i>
Bashful beardtongue	<i>Penstemon pudicus</i>
Tiehm beardtongue	<i>Penstemon tiehmii</i>
Clarke phacelia	<i>Phacelia filiae</i>
Reese River phacelia	<i>Phacelia glaberrima</i>
Williams combleaf	<i>Polycytenium williamsiae</i>
Blaine pincushion	<i>Sclerocactus blainei</i>
Nye (Tonopah) pincushion	<i>Sclerocactus nyensis</i>
Railroad Valley globemallow	<i>Sphaeralcea caespitosa</i> var. <i>williamsiae</i>
Lone Mountain goldenheads	<i>Tonestus graniticus</i>

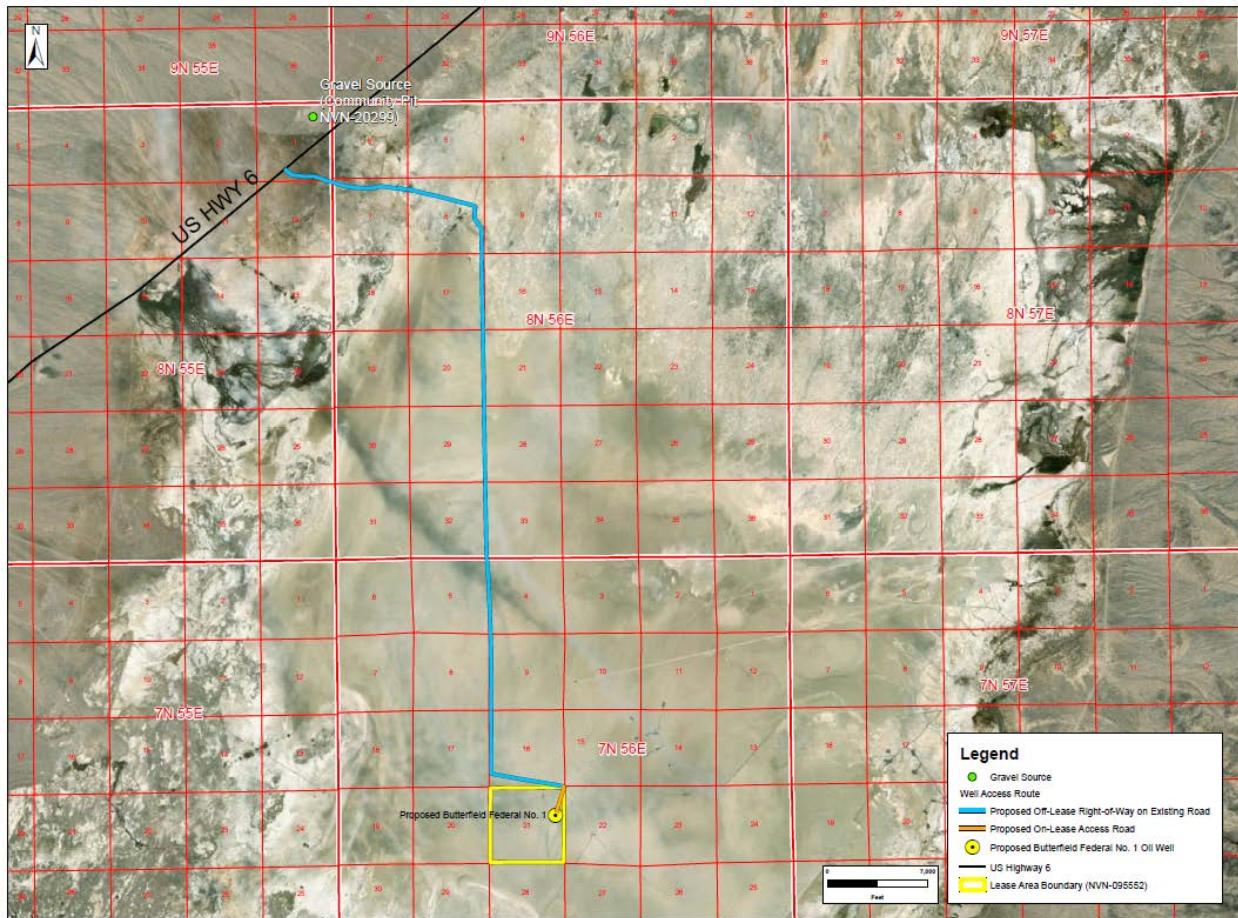
Battle Mountain District <i>Special Status</i> Animal Species List	
Bird Common Name (26)	Scientific Name
Northern goshawk	<i>Accipiter gentilis</i>
Golden eagle	<i>Aquila chrysaetos</i>
Short-eared owl	<i>Asio flammeus</i>
Burrowing owl	<i>Athene cunicularia</i>
Ferruginous hawk	<i>Buteo regalis</i>
Swainson's hawk	<i>Buteo swainsoni</i>
Greater sage-grouse	<i>Centrocercus urophasianus</i>
Western snowy plover (not protected Pacific Coast DPS)	<i>Charadrius nivosus nivosus</i>
Great Basin willow flycatcher	<i>Empidonax traillii odastus</i>
Peregrine falcon	<i>Falco peregrinus</i>
Sandhill crane	<i>Antigone canadensis</i>
Pinyon jay	<i>Gymnorhinus cyanocephalus</i>
Bald eagle	<i>Haliaeetus leucocephalus</i>
Least bittern	<i>Ixobrychus exilis</i>
Loggerhead shrike	<i>Lanius ludovicianus</i>
Black rosy-finch	<i>Leucosticte atrata</i>
Gray-crowned rosy-finch	<i>Leucosticte tephrocotis</i>
Lewis' woodpecker	<i>Melanerpes lewis</i>
Long-billed curlew	<i>Numenius americanus</i>
Mountain quail	<i>Oreortyx pictus</i>
Sage thrasher	<i>Oreoscoptes montanus</i>
Phainopepla	<i>Phainopepla nitens</i>
Flammulated owl	<i>Psiloscops flammeolus</i>
Brewer's sparrow	<i>Spizella breweri</i>
Crissal thrasher	<i>Toxostoma crissale</i>
LeConte's thrasher	<i>Toxostoma lecontei</i>
Fish Common Name (9)	Scientific Name
Big Smoky Valley speckled dace	<i>Rhinichthys osculus lariversi</i>
Monitor Valley speckled dace	<i>Rhinichthys osculus</i> ssp. 5
Oasis Valley speckled dace	<i>Rhinichthys osculus</i> ssp. 6
Fish Lake Valley tui chub	<i>Siphateles bicolor</i> ssp. 4
Hot Creek Valley tui chub	<i>Siphateles bicolor</i> ssp. 5
Little Fish Lake Valley tui chub	<i>Siphateles bicolor</i> ssp. 6
Railroad Valley tui chub	<i>Siphateles bicolor</i> ssp. 7
Big Smoky Valley tui chub	<i>Siphateles bicolor</i> ssp. 8
Charnock Ranch (Charnock Springs) tui chub	<i>Siphateles bicolor</i> ssp. 10
Mammals Common Name (31)	Scientific Name
Pallid bat	<i>Antrozous pallidus</i>
Pygmy rabbit	<i>Brachylagus idahoensis</i>
Desert pocket mouse	<i>Chaetodipus penicillatus</i>
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>
Big brown bat	<i>Eptesicus fuscus</i>
Spotted bat	<i>Euderma maculatum</i>
Greater western mastiff bat	<i>Eumops perotis</i>
Allen's big-eared (lappet-browed) bat	<i>Idionycteris phyllotis</i>
Silver-haired bat	<i>Lasionycteris noctivagans</i>
Western red bat	<i>Lasiurus blossevillii</i>

Battle Mountain District <i>Special Status</i> Animal Species List	
Hoary bat	<i>Lasiurus cinereus</i>
Dark kangaroo mouse (includes Desert Valley and Fletcher)	<i>Microdipodops megacephalus</i> ssp.
Pale kangaroo mouse	<i>Microdipodops pallidus</i>
Pahranagat Valley montane vole	<i>Microtus montanus fucosus</i>
California myotis	<i>Myotis californicus</i>
Western small-footed myotis	<i>Myotis ciliolabrum</i>
Long-eared myotis	<i>Myotis evotis</i>
Little brown bat	<i>Myotis lucifugus</i>
Fringed myotis	<i>Myotis thysanodes</i>
Cave myotis	<i>Myotis velifer</i>
Long-legged myotis	<i>Myotis volans</i>
Yuma myotis	<i>Myotis yumanensis</i>
Big free-tailed bat	<i>Nyctinomops macrotis</i>
Canyon bat (formerly western pipistrelle)	<i>Parastrellus hesperus</i>
Bighorn sheep	<i>Ovis canadensis</i> ssp.
Merriam's shrew	<i>Sorex merriami</i>
American water shrew	<i>Sorex pallustrus</i>
Brazilian free-tailed bat	<i>Tadarida brasiliensis</i>
Botta's pocket gopher	<i>Thomomys bottae</i>
Fish Spring pocket gopher	<i>Thomomys bottae abstrusus</i>
San Antonio pocket gopher	<i>Thomomys bottae curatus</i>
Amphibian Common Name (4)	Scientific Name
Western toad	<i>Anaxyrus boreas</i>
Amargosa toad	<i>Anaxyrus nelsoni</i>
Northern leopard frog	<i>Lithobates pipiens</i>
Columbia spotted frog	<i>Rana luteiventris</i>
Reptile Common Name (6)	Scientific Name
Great Basin collared lizard	<i>Crotaphytus bicinctores</i>
Long-nosed leopard lizard	<i>Gambelia wislizenii</i>
Pygmy short-horned lizard	<i>Phrynosoma douglassii</i>
Greater short-horned lizard	<i>Phrynosoma hernandesi</i>
Desert horned lizard	<i>Phrynosoma platyrhinos</i>
Western red-tailed skink	<i>Plestiodon [Eumeces] gilberti rubricaudatus</i>
Mollusc Common Name (9)	Scientific Name
California floater	<i>Anodonta californiensis</i>
Western ridged mussel	<i>Gonidea angulata</i>
Duckwater pyrg	<i>Pyrgulopsis aloba</i>
Southern Duckwater pyrg	<i>Pyrgulopsis anatina</i>
Large-gland Carico pyrg	<i>Pyrgulopsis basiglans</i>
Carinate Duckwater pyrg	<i>Pyrgulopsis carinata</i>
Oasis Valley pyrg	<i>Pyrgulopsis micrococcus</i>
Ovate Cain Spring pyrg	<i>Pyrgulopsis pictilis</i>
Duckwater Warm Springs pyrg	<i>Pyrgulopsis villacampae</i>
Ant, Wasp, Bee Common Name (2)	Scientific Name
Mojave gypsum bee	<i>Andrena balsamorhizae</i>
Mojave poppy bee	<i>Perdita meconis</i>
True Bug Common Name (1)	Scientific Name
Pahranagat naucorid bug	<i>Pelocoris shoshone shoshone</i>

Battle Mountain District <i>Special Status</i> Animal Species List	
Beetle Common Name (4)	Scientific Name
Crescent Dunes aegialian scarab	<i>Aegialia crescenta</i>
Aegialian scarab beetle	<i>Aegialia knighti</i>
Crescent Dunes aphodius scarab	<i>Aphodius</i> ssp. 2
Crescent Dunes serican scarab	<i>Serica ammomenisco</i>
Butterfly Common Name (7)	Scientific Name
Big Smoky wood nymph	<i>Cercyonis oetus alkalorum</i>
White River wood nymph	<i>Cercyonis pegala pluvialis</i>
Monarch butterfly	<i>Danaus plexippus plexippus</i>
White Mountains skipper	<i>Hesperia miriamae longaevicola</i>
Railroad Valley skipper	<i>Hesperia uncas fulvapalla</i>
White River Valley skipper	<i>Hesperia uncas grandiosa</i>
Great Basin small blue	<i>Philotiella speciosa septentrionalis</i>

Appendix D Noxious Weed Management Plan

On behalf of West Grant Canyon Development, LLC (WGC), McGinley and Associates, Inc. (McGinley) has prepared this Noxious Weed Management Plan (Plan) for the proposed Butterfield Federal No. 1 Oil Well (Project). The proposed Project is located on public lands administered by the Bureau of Land Management (BLM), Battle Mountain District (BMD), Tonopah Field Office (TFO). The location of the Project is indicated on Figure 1.



Appendix D Figure 1

Invasive plant species are recognized as key drivers of ecological change and can have significant impacts on ecosystem functioning and biodiversity (Vila et al. 2011). The Federal Invasive Species Executive Order 13122 defines an invasive plant as a non-native species whose introduction causes or is likely to cause economic or environmental damage or harm to human health (U.S. Federal Register 1999). Noxious weeds are a particularly harmful subset of invasive plant species and are defined as “any plant designated by a federal, state or county government as injurious to public health, agriculture, recreation, wildlife or property” (Sheley et al. 1999).

Ground-disturbing activities associated with the Project may allow noxious weed species to establish or to increase in their extent and density. This Plan was developed to guide the Project proponent on how to prevent, identify and control noxious weeds during construction of the on-lease access road, well pad development and, reclamation activities so that all federal, state, county and other local requirements are satisfied.

The BLM has identified the management of noxious weeds as a priority problem affecting public lands given their detrimental nature. As such, in 1992 the BLM developed a policy relating to the management and coordination of noxious weed activities, as set forth in BLM Manual 9015 – Integrated Weed Management (BLM 1992). BLM Nevada has active Noxious Weed Management Programs in each of its six districts, with the same yearly directives of preventing, monitoring and controlling new infestations. More specific to the Project, BLM noxious weed directives are outlined in the BMD Integrated Weed Management Plan and environmental assessment (EA) with the dual purpose of managing current and future infestations of noxious weeds to promote land health within the BMD, while addressing the potential environmental impacts associated with these management practices (BLM 2009).

The Nevada Department of Agriculture (NDA) is charged with the management and enforcement of the State of Nevada's (State) noxious weed law, which pertains to both private and public lands. The State defines a noxious weed as "any species of plant which is, or is likely to be, a public nuisance, detrimental or destructive and difficult to control" (Nevada Revised Statutes [NRS] 555.005). As outlined in NRS 555.130, the NDA designates the weeds of the state that are considered noxious and maintains a list of such weeds under the Nevada Administrative Code (NAC) 555.010. There are currently 47 species divided into three categories. These include 30 Category A species, nine Category B species, and eight Category C species. Category A species are not found or are limited in distribution throughout Nevada and must be actively eradicated wherever found. Category B species are established in scattered populations in some counties of Nevada and must be actively excluded where possible and where populations are not well established or are previously unknown to occur. Category C species are established and widespread in many counties of Nevada and must be actively eradicated from nursery stock dealer premises. Appendix A shows a list of all 47 noxious weed species.

Noxious Weed Regulations

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Plan Purpose and Objectives

Noxious weeds are opportunistic and aggressive plant species that readily colonize disturbed areas. Therefore, the purpose of this Plan is to develop a Noxious Weed Management Program for the Project area that prescribes methods for preventing and controlling new infestations, both during and following Project activities. This weed management plan discusses:

- Measures to control the introduction and spread of noxious weeds in the Project area;
- Worker training; and,
- Monitoring and control methods.

Overall objectives for this Plan include long and short-term objectives. Long-term objectives are to provide WGC with a systematic program for preventing, identifying and managing noxious weeds within the Project area with the goal of maintaining a productive and sustainable ecological community that meets post-exploration/production land use objectives. Post-exploration/production land use objectives include habitat for wildlife and dispersed recreation. Short-term objectives of this Plan are to facilitate compliance with the following:

- The Code of Federal Regulations (CFR) 3809 regarding the prevention of unnecessary or undue degradation of public lands;
- Chapter 555 of the NRS and the NAC;
- Stipulations in National Environmental Protection Act (NEPA) decisions; and,
- Reclamation of land disturbed by Project activities.

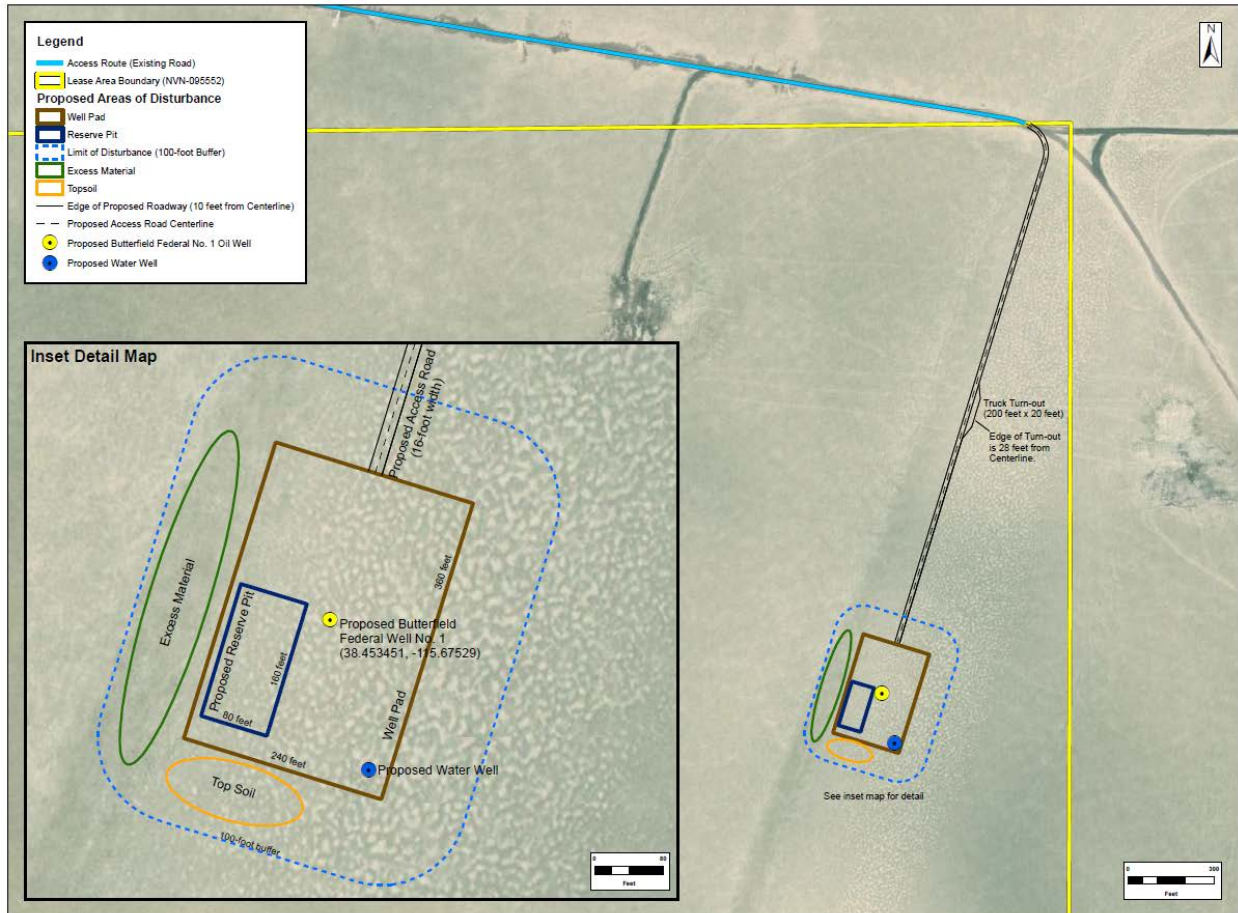
Lastly, in carrying out Plan objectives WGC should maintain coordination with community partners to help guide management decisions. Community partners include:

- Tonopah Conservation District (TCD). The TCD works to contain noxious weed infestations in Northern Nye County (within the BMD) by coordinating with state, public and private entities to conduct noxious weed inventories, treatment projects, monitoring treatment effectiveness and also works to expand public awareness of noxious weed issues.
- The Tri-County (Lincoln, Nye, and White Pine counties) Noxious Weed Management Program (Tri-County NWMP). The Tri-County NWMP has been in place since 1999 with the goal of efficiently controlling noxious weeds at the landscape scale through coordination between the three counties and entering into agreements with both public and private entities to perform weed management activities in the Tri-County area.

PROJECT DESCRIPTION

Project Area

The proposed Project is located in the northern half of Railroad Valley, midway between the towns of Tonopah, NV and Ely, NV off Highway 6. The Project area proposes to disturb approximately six acres of public lands administered by the Bureau of Land Management (BLM), Battle Mountain District (BMD), Tonopah Field Office (TFO) (see Figure 2). The Project is within Section 21, Township 7 North, Range 56 East, Mt. Diablo Baseline and Meridian in Nye County, Nevada. The Project area is located in the Central Basin and Range ecoregion (EPA 2012), where annual average total precipitation ranges from five to ten inches. Topography of the region is dominated by a Basin and Range configuration, with alternating mountain ranges and intervening xeric basins (DeCourten and Biggar 2017). Basin floors consist of alkaline playas and are bordered by alluvial fans and piedmont slopes that grade gently downwards from the bordering ranges (DeCourten and Biggar 2017). The plant community grades upward in elevation from salt-tolerant shrub species (e.g. *Atriplex* sp., *Sarcobatus* sp.) to shrub-steppe communities composed of shrubs (e.g. *Artemisia* sp., *Chrysothamnus* sp.) and perennial bunchgrasses (e.g. *Poa* sp., *Elymus* sp.). Within this larger ecoregion, the Project is more specifically situated within a generally dry, alkaline, and unvegetated playa.



Appendix D Figure 2

Project Activities

The Application for Permit to Drill (APD), dated September 12th, 2018, proposes to improve 11.06 miles of existing road on BLM administered land and to construct an additional 0.36 miles of new road within the lease boundary to access the Butterfield Federal No. 1 well pad. Surfacing material for road improvement and construction will be provided from a nearby community borrow pit. An existing access road will be improved and will have turnouts constructed approximately every mile. Construction of the new access road will include one turnout. Both roads will be maintained as needed via blading and surfacing and may be utilized by light-duty pickup trucks, drill-rigs, water trucks, tanker trucks, and heavy equipment for operation activities at the gas well. At the terminus of the access road, WGC plans to construct an approximately 5-acre well pad to drill an exploratory oil well. Mud and cuttings from drilling will be placed in a reserve pit on the well pad. Should oil in commercial quantities be discovered, a production, treating and sales facility will be constructed.

Reclamation of disturbed areas will consist of interim and final reclamation activities. Interim reclamation would be performed to rehabilitate areas not required for production that may have

been disturbed during construction, drilling, and other operations. Final reclamation of disturbed areas required for production (well pad, on-lease access road, turnouts) will be conducted upon termination of operations at the wellsite. During reclamation activities, gravel will be removed from the surface and disturbed areas re-contoured that blend indistinguishably with the surrounding landscape. Salvaged topsoil will be spread on disturbed areas in an effort to match the surrounding soils. After the reserve pit is allowed to dry, it will be backfilled and re-contoured. As sparse to no vegetation is present within the lease area no revegetation activities are proposed.

NOXIOUS WEED INVENTORY

Given the location of the Project on an un-vegetated playa, no baseline surveys were conducted for noxious weeds. Therefore, the establishment of noxious weeds within the Project area (lease area) will be assumed to be a result of Project activities and will be controlled using the methods described below, with the goal of total eradication.

NOXIOUS WEED MANAGEMENT COMPONENTS

Management of noxious weeds requires a multi-pronged approach, including the prevention and management of new or established infestations, and subsequent monitoring of management success (BLM 2009). Because there are no noxious weeds documented within the project area, this Plan is geared towards prevention and management of new infestations through: 1) the training of onsite employees in the identification of noxious weed species; 2) implementation of techniques for minimizing the spread of weed propagules; 3) treatment of new infestations following best practices; and, 4) monitoring to identify new infestations and evaluate the effectiveness of treatment activities. The implementation of this Plan will be managed by Project staff in conjunction with the BLM.

Prevention

The prevention of noxious weed infestations is the most cost-effective means of their control. Prevention, or more accurately, reduction in the potential for noxious weeds to become established as a result of project activities involves several approaches.

Education

The ability of onsite Project staff to identify and report new noxious weed infestations will be an invaluable means of quickly and effectively managing weeds. Training that provides Project personnel with an understanding of noxious weed life history and identification will be provided by the Project biologist. This training will also educate Project personnel in the environmental and economic concerns associated with the spread of noxious weeds. The NDA also offers an electronic Nevada Noxious Weed Field Guide that includes color pictures of all 47 species, describes their life history and means of control. The field guide can be accessed online at: <http://agri.nv.gov/NoxiousWeeds/>. If noxious weeds are detected, Project staff will contact a certified weed control specialist contractor, and the BLM to develop a plan for control.

Best Management Practices

Best management practices (BMPs) are those that minimize the creation of favorable conditions for noxious weed establishment and reduce the potential for their spread throughout the Project area. The following BMPs will reduce the potential for seed entering the Project area and becoming established:

- Minimize the introduction of noxious weed plant propagules. Vehicles are effective vectors of seed dispersal (Gelbard and Belnap 2003). Therefore, to prevent the transport of weed propagules into the Project area, WGC should implement an equipment cleaning program in which project vehicles and equipment are free of soil and debris capable of transporting weed propagules before entering the Project area. WGC should follow these measures in implementing such a plan: 1) cleaning of vehicles and equipment should take place at an approved off-site cleaning station; 2) an initial cleaning of all Project vehicles and equipment should occur prior to entering the Project area; 3) cleaning should be done using a high pressure wash (water in muddy conditions, compressed air in dry conditions) to remove all debris, particularly from tracks/tires, and the undercarriage; and, 4) vehicles remaining onsite would only require an initial cleaning, whereas vehicles that leave the project area and travel through weed infested areas would require an additional cleaning (as described above) prior to re-entering the Project area.
- Minimize soil disturbance and spread of infestations (if established). Disturbed areas are especially susceptible to weed establishment. During Project activities, soil disturbance should be minimized, where feasible. Furthermore, all vehicles should be confined to the access road and well pad, and not permitted to travel cross-country. In the event that noxious weeds become established in the Project area, vehicles should avoid travel through the infested area. If travel through infested areas is absolutely necessary, vehicles should be thoroughly inspected for plant propagules (including the undercarriage), and washed if necessary, before leaving the site or advancing to another location. Noxious weed propagules found on or washed from vehicles should be bagged and incinerated at an appropriate location.
- Use of effective reclamation. Topsoil will be stripped from the surface and stockpiled adjacent to the area from which it is removed, to be used later for reclamation. Interim and final reclamation of disturbed areas will be performed as described above. If noxious weeds establish in topsoil stockpiles they should be promptly treated, clearly marked and construction equipment not permitted to operate in these areas until complete eradication to avoid the spread of propagules.
- Use of certified weed-free materials. Any straw or hay bales used for sediment barrier installations, should come from sources that are certified weed-free.

Treatment of Infestations

In the event of their establishment, noxious weeds should be handled in a manner that prevents their spread, and controls or eliminates the population. The goal of weed treatment is to reduce the infestation below the level at which it causes the failure of achieving a productive and sustainable ecological community that meets post-exploration/production land use objectives. To be most effective, the treatment method used should be determined on a species-specific basis. The general treatment types most applicable to the Project area fall into two categories (mechanical and chemical) and are described in the following subsections.

Mechanical

Mechanical treatments are those methods in which the target plant, or parts thereof, are physically destroyed. Mechanical treatments include hand-pulling, mowing, cutting, and root-plowing, among others. The selection of a particular mechanical method should be determined by the life history of the target weed species and the terrain in which they have established. For all methods employed, the removal of plants before seed set or during the growing season is of vital importance to minimize the further spread of noxious weed species. Mechanical treatments may cause favorable conditions for the propagation of some weed species and should therefore be considered prior to initiation.

Manual treatments, such as hand-pulling and hoeing, are most effective when the weed infestation is small in size or in areas inaccessible to equipment. Manual removal is well-suited for the management of annual and biennial weed species, shallow-rooted species that do not resprout from residual roots, and weeds growing in loose soil types.

The use of equipment, such as tractors or vehicles with attached implements designed to cut or chop vegetation are used to separate plants from their roots. These methods are effective for managing perennial weed species, where the repeated removal of surface vegetation weakens plants by depleting carbohydrate reserves. These methods work best for managing large stands of weeds in relatively flat areas, such as along roads, and are generally used in combination with chemical treatments and reseeding.

Chemical

Chemical treatment involves the use of herbicides (chemical compounds) to kill or suppress noxious weed species. Herbicides are often used following (or concurrently) with mechanical treatments, where complete eradication is the land management goal. There are a variety of herbicides in use and are classified in terms of their mode of action and can include growth regulators, grass meristem destroyers, cell membrane destroyers, root and shoot inhibitors, and amino acid derivatives that interfere with plant metabolism in a variety of ways. The selection of an herbicide should depend on its chemical effectiveness on the target weed species, habitat types present, proximity to water, and the presence of sensitive species.

Herbicides are most effective on pure stands of a single noxious weed species, where desirable non-target plants are scarce or absent, and on rhizomatous species that require repeated cutting or pulling for control. Application of herbicides is achieved using several methods, including backpack sprayers, ATV or truck-mounted sprayers, wiping or brushing onto plants that have been cut, and by injection into the roots or trunks of weeds. Application rates depend on the target species, time of year, and soil texture. Monitoring of herbicide applied via spray methods may be done by adding dye to the herbicide. Dyes reduce the chances of over or under application and minimize the risk of negatively impacting non-target species.

When using herbicides to manage an infestation, an integrated management approach to weed control will reduce the amount of herbicide needed and discourage haphazard and wasteful herbicide use. Furthermore, considerations should be given to the safety of the environment and of the individuals applying the herbicide. Control projects using chemicals on BLM BMD lands must be conducted by licensed or certified applicators.

Monitoring

Noxious weed monitoring in the Project area has two objectives:

- To identify new infestations; and,
- In the event of a noxious weed infestation, to evaluate the effectiveness of any treatment programs.

Two types of weed surveys should be performed within the Project area to meet the above objectives. Informal surveys should periodically be carried out by trained Project personnel to identify any infestations of noxious weed species within disturbed areas of the Project. Formal monitoring should be conducted annually within all disturbed areas of the Project, such as roads, reclamation stockpiles, well pad, and reclaimed areas.

Formal monitoring is best completed in the spring when noxious weeds are easily identifiable, but before seed set. This allows sufficient time to implement a treatment program before seeds are released (making future management more difficult) and when the plants are susceptible to treatment. Formal monitoring should begin the first growing season after ground-disturbing activities, and continue each year thereafter. Should an infestation be found during monitoring, plants should be identified to species and mapped with a geographic positioning system (GPS). A species-specific management plan that outlines the treatment plan of action should then be developed with Project staff, a certified weed control applicator and the Project biologist.

The treatment objective for any noxious weed infestation will be for total eradication. Post-treatment monitoring would focus on a visual inspection of the treatment area for the presence or absence of the noxious weed species, and should only be considered successful when the target species is absent. If monitoring indicates that a treatment has not been effective in eradicating the infestation, corrective actions (such as retreatment, or the application of a different method) should be identified and implemented.

Coordination

Any weed control efforts on public lands should be coordinated with and approved by the BLM BMD. Not all herbicides have been approved for use on public lands; therefore, the choice of treatments on public lands may be limited. Application of herbicides will be done by a certified weed specialist contractor and will be coordinated with the BLM. If chemicals are to be used to treat noxious weed infestations, a Pesticide Use Proposal (PUP) will be submitted to the BLM BMD for approval prior to the use of such chemicals.

WGC will also maintain coordination with the Tonopah Conservation District (TCD) and the Tri-County (Lincoln, Nye, and White Pine counties) Noxious Weed Management Program to aid in effective monitoring and control efforts.

Conclusions

The Project area is free of vegetation, including noxious weed species, at this point. WGC should utilize the prevention techniques described in this Plan to minimize the risk of introducing noxious weeds into the Project area and the creation of conditions favorable for their establishment and spread. In the event that monitoring identifies an infestation of a noxious weed, the treatments outlined herein should be implemented, as necessary. This Plan may be updated as needed for suitability and adequacy as the Project progresses from exploration to extraction.

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Noxious Weeds of Nevada

Borage family	<i>Boraginaceae</i>
Houndstongue	<i>Cynoglossum officinale</i>
African rue	<i>Peganum harmala</i>
Puncturevine	<i>Tribulus terrestris</i>
Syrian beancaper	<i>Zygophyllum fabago</i>
Figwort family	<i>Scrophulariaceae</i>
Dalmatian toadflax	<i>Linaria dalmatica</i>
Yellow toadflax	<i>Linaria vulgaris</i>
Grass family	<i>Poaceae</i>
Crimson fountaingrass	<i>Pennisetum setaceum</i>
Giant reed	<i>Arundo donax</i>
Johnsongrass	<i>Sorghum halepense</i>
Medusahead	<i>Taeniatherum caput-medusae</i>
Loosestrife family	<i>Lythraceae</i>
Purple loosestrife	<i>Lythrum salicaria</i>
Mint family	<i>Lamiaceae</i>
Mediterranean sage	<i>Salvia aethiopsis</i>
Mustard family	<i>Brassicaceae</i>
African mustard	<i>Brassica tournefortii</i>
Austrian fieldcress	<i>Rorippa austriaca</i>
Dyer's woad	<i>Isatis tinctorial</i>
Hoary cress	<i>Cardaria</i> spp.
Perennial pepperweed	<i>Lepidium latifolium</i>
Nightshade family	<i>Solanaceae</i>
Black henbane	<i>Hyoscyamus niger</i>
Horsenettle	<i>Solanum carolinense</i>
Silverleaf nightshade	<i>Solanum elaeagnifolium</i>
Parsley family	<i>Apiaceae</i>
Poison-hemlock	<i>Conium maculatum</i>
Waterhemlock	<i>Cicuta</i> spp.
Pea family	<i>Fabaceae</i>

Camelthorn	<i>Alhagi maurorum</i>
Goatsrue	<i>Galega officinalis</i>
Swainsonpea	<i>Sphaerophysa salsula</i>
Rose family	<i>Rosaceae</i>
Sulfur cinquefoil	<i>Potentilla recta</i>
Salvinia family	<i>Salviniaceae</i>
Giant salvinia	<i>Salvinia molesta</i>
Spurge family	<i>Euphorbiaceae</i>
Leafy spurge	<i>Euphorbia esula</i>
Sunflower family	<i>Asteraceae</i>
Canada thistle	<i>Cirsium arvense</i>
Common cupina	<i>Crupina vulgaris</i>
Common St. Johnswort	<i>Hypericum perforatum</i>
Diffuse knapweed	<i>Centaurea diffusa</i>
Iberian starthistle	<i>Centaurea iberica</i>
Malta starthistle	<i>Centaurea melitensis</i>
Mayweed chamomile	<i>Anthemis cotula</i>
Musk thistle	<i>Carduus nutans</i>
Perennial sowthistle	<i>Sonchus arvensis</i>
Purple starthistle	<i>Centaurea calcitrapa</i>
Rush skeletonweed	<i>Chondrilla juncea</i>
Russian knapweed	<i>Acroptilon repens</i>
Scotch thistle	<i>Onopordum acanthium</i>
Spotted knapweed	<i>Centaurea biebersteinii</i>
Squarrose knapweed	<i>Centaurea virgata</i> var. <i>squarrosa</i>
Yellow starthistle	<i>Centaurea solstitialis</i>
Tamarisk family	<i>Tamaricaceae</i>
Saltcedar	<i>Tamarix ramosissima</i>
Watermilfoil family	<i>Halorgaceae</i>
Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Waterweed family	<i>Hydrocharitaceae</i>
Hydrilla	<i>Hydrilla verticillata</i>

Appendix E Comment Summary

BLM Received comments on the first EA from the Center for Biological Diversity, Defenders of Wildlife, Sierra Club, and Western Watersheds Project

Comments are summarized, with responses, in the table below.

Comment	Response
1. BLM failed to provide adequate notice and opportunity to comment. We hereby object to BLM’s abbreviated comment period (May 3-17)... and request the right to submit supplemental information as it becomes available.	The project website was made available for viewing on the Eplanning website on May 3. The comment period was May 3-May 17. Dear Interested letters were sent the same day, May 3, 2019 and comments were accepted until the time of this publication.
2. EA fails to consider impacts to floodplain and seasonally-flooded playa.	Floodplains and seasonally flooded playa is discussed in Sections 3.3.3 and 3.3.5. The operator will obtain a flood damage prevention permit from Nye County prior to the start of the project as an environmental protection measure. BMPs, EPMs, State and Federal laws will be followed.
3. EA fails to incorporate water protection measures relied upon in leasing EA.	The water protection laws are referenced in the EPMs, SOPs, and COAs for the APD.
4. EA fails to disclose or consider effects from water use, contamination, and disposal.	Section 3.3.5 was edited to include information about RRV water resources from Denburgh and Rush, 1973. Water use is temporary and finite, strictly restricted to well drilling. Water disposal is mandated by Onshore Order #7 if production is reached.
5. EA improperly segments decision to avoid disclosing impacts from hydraulic fracturing.	The proponent has indicated HF is not an option for this project. Further NEPA analysis would be required if HF were proposed at a later date.
6. EA contains no disclosure or analysis of indirect & cumulative climate impacts.	Emissions are limited to equipment used in drilling. Particulate emissions are considered to be finite and temporary in nature.
7. EA fails to consider impacts to BLM-designated sensitive species, including the snowy plover and an undescribed species of boreal toad.	Sensitive species are discussed in Section 3.3.6. The undescribed species of toad is not present in the proposed disturbance area.
8. BLM must consult with FWS regarding impacts to Railroad Valley springfish	BLM biologist determined that a “no effect” determination applied to the Butterfield Federal No. 1 APD for Railroad Valley springfish; and BLM confirmed this with NDOW. BLM contacted USFWS to see if there was a need for Section 7 consultation. USFWS responded to BLM that no Section 7 consultation was required and the proposed well location was not host to the Railroad Valley springfish.

**U.S. Department of the Interior
Bureau of Land Management**

**Finding of No Significant
Impact**

DOI-BLM-NV-B020-2019-0020-EA

**Application for Permit to Drill
and Right-of-Way Application
Butterfield Federal No. 1 Oil Well**

PREPARING OFFICE

U.S. Department of the Interior
Bureau of Land Management
Tonopah, Nevada



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Finding of No Significant Impact

Application for Permit to Drill and Right-of-Way Application for the Butterfield Federal No. 1 Oil Well

NEPA DOI-BLM-NV-B020-2019-0020-EA Case Files N-095552 (Lease), N-97203 (ROW)

I have reviewed Environmental Assessment (EA) **DOI-BLM-NV-B020-2019-0020-EA** dated May 22, 2019. The EA addresses the Application for Permit to Drill (APD) and an associated application for a right-of-way (ROW) for an existing road to access the proposed well site. After consideration of the environmental effects as described in the EA, and incorporated herein, I have determined that the proposed action identified in the EA will not significantly affect the quality of the human environment and that an Environmental Impact Statement (EIS) is not required to be prepared.

The proposed action is in conformance with the approved Tonopah Resource Management Plan, and is consistent with applicable plans and policies of county, state, tribal and Federal agencies. This finding and conclusion is based on my consideration of the Council on Environmental Quality's (CEQ) criteria for significance (40 CFR 1508.27), both with regard to the context and the intensity of impacts described in the EA.

Context

The proposed exploratory oil well would involve a maximum of 340 x 460 feet (6.2) acre disturbance within a sparsely-vegetated 67,984-acre playa soil complex in Railroad Valley. If exploration were to result in production, facilities for production and storage would be allowed without further NEPA analysis if they remained within the same disturbance boundary, assuming no new overriding issues arose. If exploration did not result in production, the well would be sealed and capped with a dry well marker, and the site would be re-contoured; re-vegetation is not necessary. The ROW is for 11.06 miles of existing raised gravel bed road where it extends from U.S. Highway 6 to the lease boundary. The on-lease access road would depart the ROW and extend an additional 2,000 feet to the southwest, connecting the existing gravel road with the Butterfield Federal No. 1 well pad.

Intensity

1. Impacts that may be both beneficial and adverse.

An interdisciplinary (ID) team considered the project's potential to affect all resources, and analyzed potential effects to water flow across the playa; soils; vegetation; visual resources; and wildlife, including migratory birds, eagles and BLM Sensitive species. The ID team's analysis determined that all of these effects would be minor. In summary, the project is within a one percent, 100-year floodplain, and could be seasonally flooded. The course of floodwaters may be slightly altered by the raised gravel well pad and other facilities. Soil and vegetation disturbance would be limited to the 6.2 acre disturbance boundary, in an area of erodible soils and sparse vegetation. Topsoil would be removed and stored, gravel would protect the erodible soils from erosion during the project; and after completion the gravel would be removed, the site would be re-contoured. No vegetation exists and no reseeding is necessary. Visual impacts would be minimized by various requirements (see EA Appendix B) and would be within

allowable limits for the Class IV Visual Resource Management objectives prescribed for the area by the RMP. Effects to wildlife are anticipated to be minor, with no population-level effects. The area of proposed disturbance is small relative to the available surrounding habitat, and does not provide important habitat for any species. The water source is a well that would be drilled on the well pad and used exclusively for drilling the well. The water well would be plugged and abandoned per NAC 534. See EA Appendix B for Environmental Protection Measures that would minimize wildlife effects. These include a 25 mph speed limit which will help prevent collisions between project vehicles and wildlife; requirements to avoid work during the nesting seasons for migratory birds or eagles, or survey and avoid nests; fencing and netting requirements for the reserve pit.

2. The degree to which the proposed action affects public health or safety.

Public health and safety are not expected to be affected by the Proposed Action. The required Environmental Protection Measures and Standard Operating Procedures (Appendices A and B) include those considered necessary to ensure human health and safety.

3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

None of these characteristics are present in the project area. A Class III cultural resources inventory was completed for the ROW and well pad by ARH Archaeology & Architectural History LLC. During the inventory, ARH recorded one archaeological site and one isolated artifact. The site was determined not eligible for inclusion in the National Register of Historic Places (NRHP) under any criteria.

4. The degree to which the effects on the quality of the human environment are likely to be controversial.

There is no known scientific controversy regarding the effects of the Proposed Action, and the effects are not anticipated to be considered controversial by the general public.

5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.

The Proposed Action does not use new or untested methods or technology, but well-established techniques and standard measures to protect the environment and human safety. The anticipated effects are well known as a result of similar actions in similar environments.

6. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.

The action is not new and would not set a precedent. BLM has issued permits to drill eleven other oil wells within the same playa, and numerous other such permits in the larger region. Each project is evaluated when proposed and does not set a precedent for future decisions.

7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.

Cumulative impacts are analyzed in the EA and found to be minimal for all potentially-affected resources.

8. The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the NRHP or may cause loss or destruction of significant scientific, cultural, or historical resources.

No significant scientific, cultural, or historical resources are present in the project area. See item (3) above.


9. The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the ESA of 1973.

No ESA-listed species or critical habitat occurs within or near the project area.

10. Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.

The Proposed Action is consistent with all applicable Federal, State and local laws and requirements.

Signature

<p>Signature</p>  <p>Timothy J. Coward Field Manager</p>	<p>Date</p> <p>5/22/19</p>
---	----------------------------

BUTTERFIELD FEDERAL NO. 1 OIL WELL

**DECISION RECORD
APPLICATION FOR PERMIT TO DRILL
AND RIGHT OF WAY
APPROVAL**

Right of Way Number: N-97203
DOI-BLM- NV-B020-2019-0020-EA

U.S. Department of the Interior
Bureau of Land Management
Tonopah Field Office, NV
Tonopah, Nevada

**DECISION RECORD
APPLICATION FOR PERMIT TO DRILL
AND RIGHT OF WAY
APPROVAL:**



**Timothy J. Coward
Field Manager
Tonopah Field Office**

5/22/19

Date Signed

DECISION

WEST GRANT CANYON DEVELOPMENT LLC	:	
Attn: Ben Peterson	:	Fluid Minerals
459 North 300 West, Suite 9	:	
Kaysville UT 84037	:	

West Grant Canyon Development LLC Application for Permit to Drill Butterfield Federal No. 1 Oil Well

INTRODUCTION

The Bureau of Land Management (BLM) has prepared an Environmental Assessment (EA), DOI-BLM-NV-B020-2019-0020-EA that analyzes the affected environment, environmental impacts, and identifies Standard Operating Procedures (SOP) and Environmental Protection Measures (EPM) associated with West Grant Canyon Development LLC.'s Application for Permit to Drill (APD) the Butterfield Federal No. 1 oil well. The project is located in Section 21, T. 7 N., R. 56 E., Mount Diablo Meridian (M.D.M.) (Project Area). The project consists of a well pad and access road with 6.2 acres of new surface disturbance, and use of an existing road right-of-way (ROW) of 11.2 acres of existing surface disturbance.

BACKGROUND

The Environmental Assessment (EA) analyzed the Proposed Action and a No Action alternative. The No Action alternative would not respond to the BLM's purpose and need to provide authorized use of the public land to drill the well and develop associated infrastructure and legal access to the drill site, in compliance with the Federal Land Policy and Management Act of 1976 (FLPMA) and as established by BLM's legal responsibility to respond to West Grant Canyon Development LLC.'s Application for Permit to Drill (APD) and application for a Title V FLPMA ROW for access to drill on Oil and Gas lease N-095552, on which they have valid existing lease rights.

RATIONALE

Issuing the permit to drill is in conformance with the Tonopah Resource Management Plan (RMP) and Record of Decision approved on October 2, 1997. The proposed well site is within an area that is designated as "open to fluid minerals leasing subject to standard lease terms and conditions" (Tonopah RMP, page 22). The Fluid Minerals Objective in the Tonopah RMP (page 22) is "To provide opportunity for exploration and development of fluid minerals such as oil, gas, and geothermal resources, using appropriate stipulations to allow for the preservation and enhancement of fragile and unique resources." Appropriate stipulations were included in the Proposed Action and, based on the EA, I found that these were adequate to protect resources of concern.

Issuing the ROW is in conformance with the Lands and Rights-of-Way Objective in the Tonopah RMP (page 18), "To make lands available for community expansion and private economic development and to

increase the potential for economic diversity” and with the Standard Operating Procedure (Tonopah RMP, page 33) stating “Unless the land has been dedicated to a specific use or uses, public land within the Tonopah Planning Area is available for consideration for linear rights-of-way for access...” The proposed ROW is for an existing road; the land is not dedicated to another use and there are no environmental impacts associated with granting the ROW.

AUTHORITY

This decision conforms to BLM’s Onshore Order #1, which requires that approval of all proposed exploratory, development, and service wells and all required approvals of subsequent well operations and other lease operations be obtained in accordance with 43 CFR 3162.3-1, 3162.3-2, 3162.3-3, 3162.3-4 and 3162.5-1. It conforms with 43 CFR 3101.1-2, which states that a lessee shall have the right to use so much of the leased lands as is necessary to explore for, drill for, mine, extract, remove and dispose of all the leased resource in a leasehold, subject to: stipulations attached to the lease; restrictions deriving from specific, nondiscretionary statutes; and such reasonable measures as may be required by the authorized officer to minimize adverse impacts to other resource values, land uses or users not addressed in the lease stipulations at the time operations are proposed.

This decision conforms with all Nevada State and Federal requirements including, but not limited to, those of the BLM, State of Nevada Division of Minerals, State of Nevada Division of Environmental Protection, Nevada State Engineer, and the Federal Environmental Protection Agency. It is in conformance with Nye County Policy Plan for Public Lands (2011, page 38) which states, “Oil and gas resources should be inventoried and development encouraged.”

The decision to issue the ROW conforms to national policy under 43 CFR 2801.2.

PUBLIC INVOLVEMENT

West Grant Canyon Development LLC.’s Notice of Staking was made available for public review and comment in the Tonopah Field Office public room from June 25, 2018 to August 25, 2018. BLM met with the Duckwater Shoshone Tribe representative, Warren Graham on July 10 and July 16 for site visits. BLM consulted via email with Nevada Department of Wildlife (NDOW) in July 2018. The APD was submitted on September 12, 2018 through the Automated Fluid Mineral Support System (AFMSS).

The EA was made available for public review and comment from May 3 to May 17. Dear Interested letters were sent to 63 individuals, local, state and federal agencies, and various organizations on May 3, 2018. One comment letter was received from Center for Biological Diversity, Sierra Club, and Western Watersheds.

Substantive comments were evaluated and considered by the BLM during the decision making process. Minor corrections or updates to the EA were made as a result of the substantive comment review. The BLM reviewed and considered these comments and determined that they did not identify or present any significant new information or changed circumstances that would warrant additional NEPA analysis. Responses to substantive comments can be found in Appendix E of the EA.

DECISION

A BLM Interdisciplinary (ID) Team considered all elements of the environment that are listed in the 2008 BLM NEPA Handbook Appendix 1 and the Nevada Instruction Memorandum BLM-NV-IM-2009-030 as required to be considered in EAs, identified whether they were present and had the potential to be affected (EA section 3.1), and addressed the potential effects in EA Chapters 3 and 4. The ID Team identified other elements of the human environment had the potential to be affected (EA section 3.2) and also addressed them in EA Chapters 3 and 4. With environmental protection measures incorporated in the Proposed Action (EA Chapter 2) and including Conditions of Approval and Standard Operating Procedures and (EA Appendices A and B), the EA found the potential effects to be minimal and/or temporary and I found that they did not meet the criteria for significance (see FONSI).

CONDITIONS OF APPROVAL

All of the environmental protection measures incorporated in the Proposed Action (EA Chapter 2) and the Standard Operating Procedures and Environmental Protection Measures (EA Appendices A and B) are incorporated by reference from the EA and are included in this Decision as part of the approved action.

APPEAL PROVISIONS

If you are adversely affected by this decision, you may appeal the decision. This decision will go into effect immediately and will remain in effect while appeals are pending unless a stay is granted under 43 CFR 4.21(b).

A person who wishes to appeal to the Interior Board of Land Appeals must do so under 43 CFR 4.411 and must file in the office of the officer who made the decision (not the board), in writing to Tonopah Field Manager, 1553 S. Main St., PO Box 911, Tonopah, Nevada 89049. A person served with the decision being appealed must transmit the notice of appeal in time to be filed in the office where it is required to be filed within thirty (30) days after the date of service.

The notice of appeal must give the serial number or other identification of the case and may include a statement of reasons for the appeal, a statement of standing if required by § 4.412(b), and any arguments the appellant wishes to make. Attached Form 1842-1 provides additional information regarding filing an appeal.

No extension of time will be granted for filing a notice of appeal. If a notice of appeal is filed after the grace period provided in §4.401(a), the notice of appeal will not be considered and the case will be closed by the officer from whose decision the appeal is taken. If the appeal is filed during the grace period provided in §4.401(a) and the delay in filing is not waived, as provided in that section, the notice of appeal will not be considered and the appeal will be dismissed by the Board.

The appellant shall serve a copy of the notice of appeal and any statements of reason, written arguments, or briefs under §4.413 on each adverse party named in the decision from which the appeal is taken and on the Office of the Solicitor, Pacific Southwest Regional Solicitor, U.S. Department of the Interior, 2800 Cottage Way, Room E-2753, Sacramento, California 95825-1890. Service must be accompanied by personally serving a copy to the party or by sending the document by registered or certified mail, return receipt requested, to the address of record in the bureau, no later than 15 days after filing the document.

In addition, within thirty (30) days of receipt of this decision you have the right to file a petition for a stay together with your appeal in accordance with the regulations at 43 CFR 4.21. The petition must be served upon the same parties specified above.

Pursuant to 43 CFR 4.471(c), a petition for stay, if filed, must show sufficient justification based on the following standards:

- 1) The relative harm to the parties if the stay is granted or denied;
- 2) The likelihood of the appellant's success on the merits;
- 3) The likelihood of immediate and irreparable harm if the stay is not granted; and,
- 4) Whether the public interest favors granting the stay.

43 CFR 4.471 (d) provides that the appellant requesting a stay bears the burden of proof to demonstrate that a stay should be granted. At the conclusion of any document that a party must serve, the party or its representative must sign a written statement certifying that service has been or will be made in accordance with the applicable rules and specifying the date and manner of such service (43 CFR 4.422(c)(2))

cc: Nevada State Office,
Branch of Mineral Resources (Fluid)

DECISION

WEST GRANT CANYON DEVELOPMENT LLC	:	
Attn: Ben Peterson	:	Right-Of-Way
459 North 300 West, Suite 9	:	N-97203
Kaysville UT 84037	:	

**West Grant Canyon Development LLC
Plan of Development
Approval
N-97203**

INTRODUCTION

The BLM, Tonopah Field Office (TFO) prepared an Environmental Assessment (DOI-BLM-NV-B020-2019-0020-EA) that analyzes the potential impacts of approving an Application for Permit to Drill (APD) and Right of Way (ROW) access road to the lease boundary. The Project and associated activities are located in Section 21, T. 7 N., R. 56 E., Mount Diablo Meridian (M.D.M.).

The Proposed Action, which included the use and improvement of an existing road to the Project Area, was designed to comply with the FLPMA and regulations contained in 43 CFR 2800, the Tonopah RMP, and other applicable environmental laws and policies.

West Grant Canyon Development LLC's Plan of Development (POD) for the use of this road (N-97203) described as part of the Proposed Action for the Application for Permit to Drill (APD) the Butterfield Federal No. 1 oil well, filed pursuant to 43 CFR 2800, was submitted to the Bureau of Land Management (BLM) on September 5, 2018.

DECISION

It is my decision to approve the ROW for the existing road to the Project Area including all design elements as described in the EA and the Plan of Development (N-97203).

The Plan of Development (N-97203) includes specified environmental protection measures. Applicant committed environmental protection measures and standard operating procedures are specified in Appendix A and B of the EA and shall become conditions of approval for the POD. West Grant Canyon Development LLC may only perform those actions that have been described in the POD. West Grant Canyon Development LLC must also comply with all other applicable federal, state, and local regulations, including obtaining all necessary permits from other federal, state, and local agencies, and fulfilling any other applicable FLPMA requirements before proceeding with this Project.

The Proposed Action would utilize approximately 11.1 miles of existing 12-foot-wide road (N-97203) on public land.

COMPLIANCE

The selected Proposed Action is in conformance with the Tonopah Record of Decision (ROD) and Approved Resource Management Plan (RMP) (BLM 1997). Although the proposed action is not specifically provided for in the RMP, it is clearly consistent with the goals and objectives of the RMP, which are to:

- Manage public lands in a manner that meets public, local, state, and federal agency needs for use authorizations such as rights-of way, permits, leases, and easements while avoiding or minimizing adverse impacts to other resource values; and
- Respond to public, local, state, and federal agency needs for land for community development, utility and other associated rights-of-way, communication sites, and other allowed uses of BLM administered lands.

The BLM has the responsibility to manage the surface and subsurface resources on public lands located within the jurisdiction of the Tonopah Field Office. The proposed action is not in any area that the RMP, identifies as closed to linear ROWs, or otherwise limited for the uses and activities described. The Tonopah RMP, ROD (page 19, number 6) states in part:

- All other lands within the Tonopah Planning Area in which there are no unresolvable conflicts with other resource values would be open to consideration for linear or areal rights-of-way, leases, and land use permits.

PUBLIC INVOLVEMENT

- West Grant Canyon Development LLC.'s Notice of Staking was made available for public review and comment in the Tonopah Field Office public room from June 25, 2018 to August 25, 2018. BLM met with the Duckwater Shoshone Tribe representative, Warren Graham on July 10 and July 16 for site visits. BLM consulted via email with Nevada Department of Wildlife (NDOW) in July 2018. The APD was submitted on September 12, 2018 through the Automated Fluid Mineral Support System (AFMSS).
- The EA was made available for public review and comment from May 3 to May 17. Dear Interested letters were sent to 63 individuals, local, state and federal agencies, and various organizations on May 3, 2018. One comment letter was received from Center for Biological Diversity, Sierra Club, and Western Watersheds.
- Substantive comments were evaluated and considered by the BLM during the decision making process. Minor corrections or updates to the EA were made as a result of the substantive comment review. The BLM reviewed and considered these comments and determined that they did not identify or present any significant new information or changed circumstances that would warrant additional NEPA analysis. Responses to substantive comments can be found in Appendix E of the EA.

43 CFR 2800 APPEAL STATEMENT

In general, a decision of the BLM is not effective during the time in which an adversely affected person may file a notice of appeal (43 CFR 4.21(a)(1)). However, according to regulation, BLM decisions issued under 43 CFR Part 2800 are and remain in effect pending appeal (43 CFR 2801.10(b)). Since this right-of-way decision is issued under 43 CFR Part 2800, it is in full force and effect as of the date of issuance. This decision may be appealed to the Interior Board of Land Appeals, Office of the Secretary, in accordance with the regulations contained in 43 CFR, Part 4 and the attached Form 1842-1. If an appeal is taken, your notice of appeal must be filed in this office at 1553 S. Main Street, P.O. Box 911, Tonopah, NV 89049, within 30 days from receipt of this decision. The appellant has the burden of showing that the decision appealed from is in error. This decision will remain in full force and effect during the appeal unless a written request for a stay is granted.

If you wish to file a petition pursuant to regulations at 43 CFR 2801.10 or 43 CFR 2881.10 for a stay of the effectiveness of this decision during the time that your appeal is being reviewed by the Board, the petition for a stay must accompany your notice of appeal. A petition for a stay is required to show sufficient justification based on the standards listed below. Copies of the notice of appeal and petition for a stay must also be submitted to each party named in this decision and to the Interior Board of Land Appeals and to the appropriate Office of the Solicitor (see 43 CFR 4.413) at the same time the original documents are filed in this office. If you request a stay, you have the burden of proof to demonstrate that a stay should be granted.

Standards for Obtaining a Stay

Except as otherwise provided by law or other pertinent regulation, a petition for a stay of a decision pending appeal must show sufficient justification based on the following standards:

1. The relative harm to parties if the stay is granted or denied.
2. The likelihood of the appellant's success on the merits.
3. The likelihood of immediate and irreparable harm if the stay is not granted.
4. Whether the public interest favors granting the stay.

**U.S. Department of the Interior
Bureau of Land Management**

Environmental Assessment

DOI-BLM-NV-B020-2017-0002-EA

**June 2017 Competitive Oil and Gas
Lease Sale**

PREPARING OFFICE

U.S. Department of the Interior
Bureau of Land Management
Battle Mountain District,
Nevada



Environmental Assessment

DOI-BLM-NV-B020-2017-0002-EA

June 2017 Competitive Oil and Gas Lease Sale

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Chapter 1. Introduction

1.1 Background and Summary

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

The BLM Nevada State Office (NVSO) conducts competitive sales for oil and gas lease parcels in the Battle Mountain District. The NVSO publishes a Notice of Competitive Lease Sale annually that lists lease parcels to be offered at the auction at least 90 days before it is held. The BLM bases its decision as to which parcels to offer for a competitive lease sale on current resource and land use information and the management framework developed in the appropriate district or field office Resource Management Plans (RMPs).

In the process of preparing a lease sale, the NVSO sends a list of land parcels, based on land nominated by the public, to each field office where the parcels are located. As part of the Environmental Assessment (EA), in conformance with the National Environmental Policy Act (NEPA), the field office staff then reviews the parcels to determine:

- if they are in areas open to leasing, according to the applicable approved RMP;
- if new information has become available which might change any analysis conducted during the planning process;
- if appropriate consultations have been conducted;
- what appropriate stipulations from the RMP should be included;
- whether, based on new information, parcels or parts of parcels should be deferred from leasing pending either development of new stipulations or closure to leasing in an updated RMP; and
- if there are special resource conditions and applicable existing laws of which potential bidders should be made aware, via lease notices.

Based on the EA, BLM management will decide which parcels to make available for leasing and which stipulations and lease notices to attach to the parcels. Those parcels and stipulations that are included in the State Director's decision would then be made available to the public through a Notice of Competitive Lease Sale, which would specify lease stipulations applicable to each parcel. Occasionally, additional information obtained after publishing the Notice of Competitive Lease Sale may result in deferral of certain parcels prior to the day of the lease sale. (Here and throughout this EA the term "parcels" refers to "parcels or parts of parcels," as stipulations and deferrals are applied to the smallest appropriate part of a parcel, down to 40-acre quarter-quarter section or lot.)

This EA documents the review and environmental analysis of the 106 parcels on the preliminary list nominated for the June 2017 Competitive Oil and Gas Lease Sale that are administered by Battle Mountain District Office, which consists of the Tonopah and Mt. Lewis Field Offices; plus one previously-leased parcel proposed for reinstatement (Figures 1-5, parcel maps; Appendix A, legal land

descriptions). The EA verifies conformance with the approved Land Use Plan (see Section 1.3), and provides the rationale for any lease stipulations or deferrals applied to specific parcels.

An assessment of potential environmental impacts was conducted by an interdisciplinary team (ID Team) of resource specialists. The ID Team considered historical data and personal knowledge of the areas involved, conducted field inspections, and reviewed existing databases and file information to assess potential effects and to determine the appropriate stipulations and lease notices to attach to specific parcels, and whether parcels should be deferred from leasing.

For the preliminary EA, the ID Team analyzed three alternatives:

- **Proposed Action:** All preliminary lease parcels (parcels on the list provided by NVSO for analysis) would be included in the June 2017 Notice of Competitive Lease Sale, with stipulations from the existing RMPs applied where appropriate.
- **Partial Deferral Alternative:** Parcels with resources that would not be adequately protected by existing RMP stipulations would be deferred from sale until an RMP update would provide new stipulations. All preliminary lease parcels not proposed for deferrals would be included in the June 2017 sale (Figures 2-5).
- **No Leasing Alternative:** No parcels would be offered for lease sale in June 2017. This alternative is included as a basis for assessing and comparing potential impacts.

For this revised EA, in response to new direction from the BLM NVSO, and in response to information received during the comment period regarding additional important habitat areas for wildlife species of management concern, the ID Team considered an additional alternative.

- **Additional Resource Protection Alternative:** Instead of deferring some parcels and parts of parcels from lease sale pending a future RMP update, new stipulations would be created and applied immediately to the same parcels (entire parcels) via this EA process. Additional parcels with important wildlife habitats would also have appropriate stipulations applied (Appendix C.2).

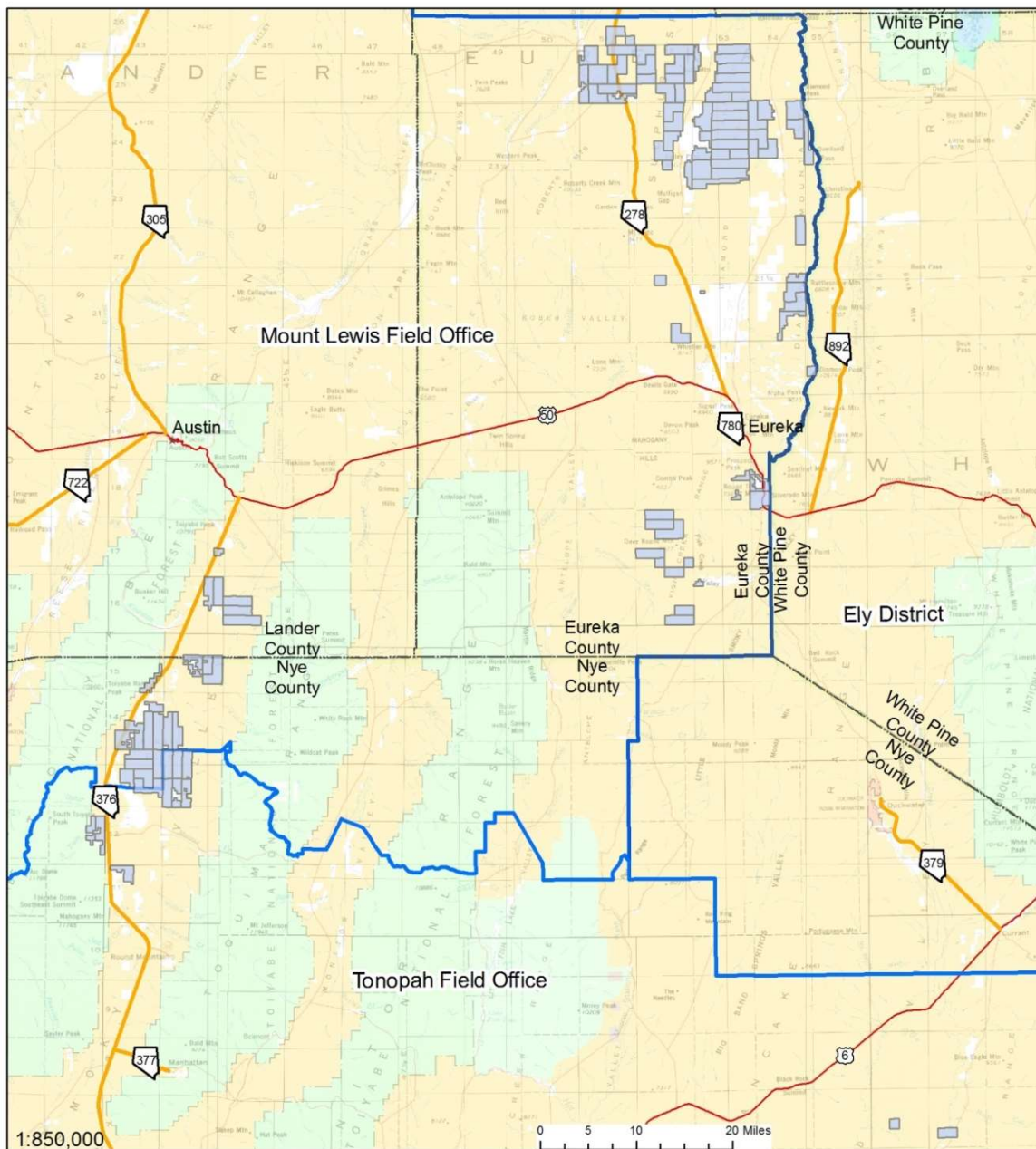
All four alternatives are further described in Chapter 2.

At the time of this review, it is not known whether the nominated parcels will receive bids, if leases would be issued, or what types of lease operations might be proposed in the future, if any. BLM would conduct additional site-specific, project-specific NEPA analysis whenever an Application for Permit to Drill (APD) is submitted. However, for this EA, we can make some general assumptions about what type of activities could occur on oil and gas leases, and provide general analysis of potential impacts associated with those types of activities. A reasonably foreseeable development (RFD) scenario is described in detail in Chapter 3. In summary, based on historic information and anticipated activity, over the next ten years approximately 65-100 acres of surface disturbance associated with potential oil and gas exploration and production activities could be expected to occur in the Battle Mountain District. For the purpose of this analysis, we assume that over the next 10 years:

- **Proposed Action:** Oil and gas exploration and production would disturb 65-100 acres within the Battle Mountain District, potentially including any of the nominated June 2017 lease parcels.
- **Partial Deferral Alternative:** Oil and gas exploration and production would disturb 65-100 acres within the Battle Mountain District, potentially including any of the nominated June 2017 lease parcels not proposed for deferral.

- **Additional Resource Protection Alternative:** Oil and gas exploration and production would disturb 65-100 acres within the Battle Mountain District, potentially including any of the nominated June 2017 lease parcels, but within the parameters of new protective stipulations.
- **No Leasing Alternative:** Oil and gas exploration and production would occur elsewhere in the Battle Mountain District; no surface disturbance would occur within the nominated parcels.

Under any alternative, all appropriate statutes, regulations and policies (see Section 1.4) and *Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development* (DOI and USDA 2007; commonly referred to as The Gold Book) would be applied, along with stipulations specified for each lease parcel (Appendix B). The main difference in effects between the Proposed Action and Partial Deferral Alternative is that the latter would have less potential for effects to the resources targeted for protection by the deferrals, pending RMP revisions that would include the necessary protective measures; and/or lease purchasers would be directed away from investing in areas where development would likely be restricted due to known overriding resource concerns. For detailed analyses of the alternatives, see Chapters 3 and 4.



**BMDO Oil & Gas Parcel Map
June 2017**

LEGEND

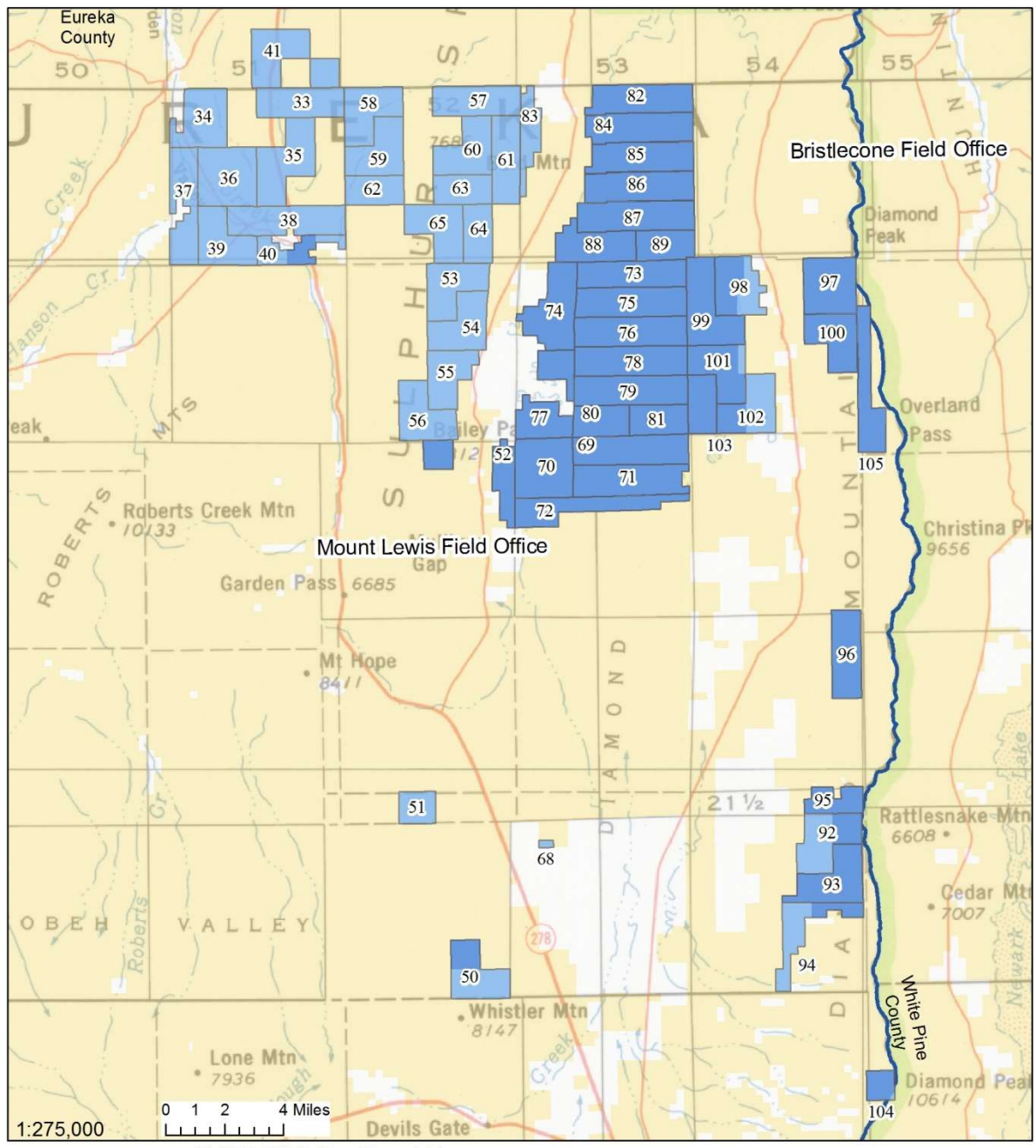
OG Lease Sale Parcels-June 2017	Forest Service
County Boundary	Fish and Wildlife Service
Mount Lewis Field Office	Private
Tonopah Field Office	Water
Bureau of Indian Affairs	
Bureau of Land Management	
Department of Energy	

**Nevada
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Figure 1. Overview: June 2017 Oil and Gas Lease Sale proposed lease parcels (Proposed Action and Additional Resource Protection Alternative).



BMDO Oil & Gas Parcel Map with Proposed Deferral Parcels
Diamond Valley/Range, Sulphur Spring Range

LEGEND

- OG Lease Sale Parcels-June 2017
- Recommended Deferral under Partial Deferral Alternative
- County Boundary
- Mount Lewis Field Office
- Tonopah Field Office
- Bureau of Land Management Private

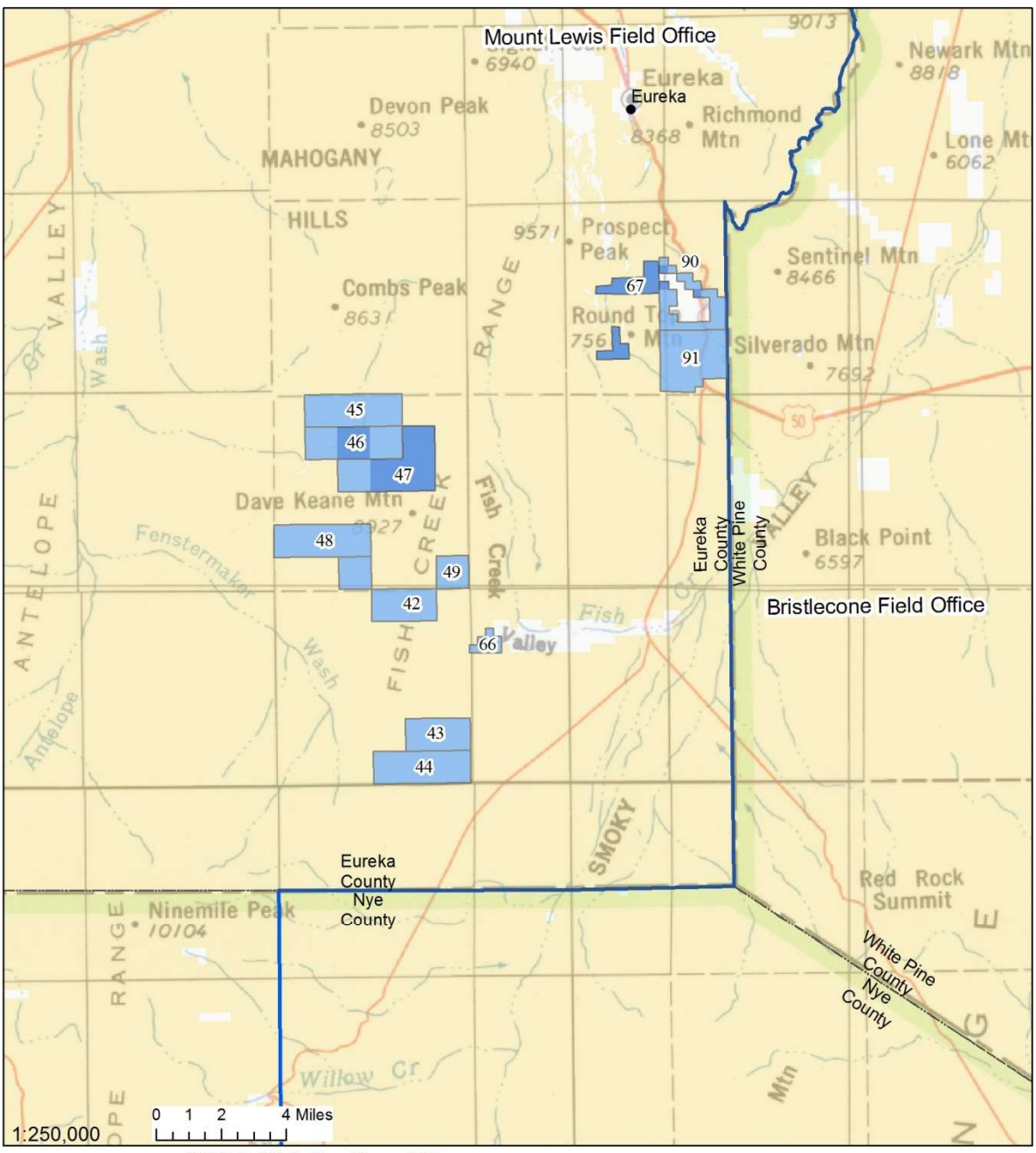


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Figure 2. Proposed lease parcels: Diamond Valley/Range, Sulphur Spring Range, Garden Valley. Parcels proposed for deferral under Partial Deferral Alternative: dark blue.



**BMDO Oil & Gas Parcel Map
with Proposed Deferral Parcels
Fish Creek Valley/Range**

LEGEND

- OG Lease Sale Parcels-June 2017
- Recommended Deferral under Partial Deferral Alternative
- County Boundary
- Mount Lewis Field Office
- Tonopah Field Office
- Bureau of Land Management Private



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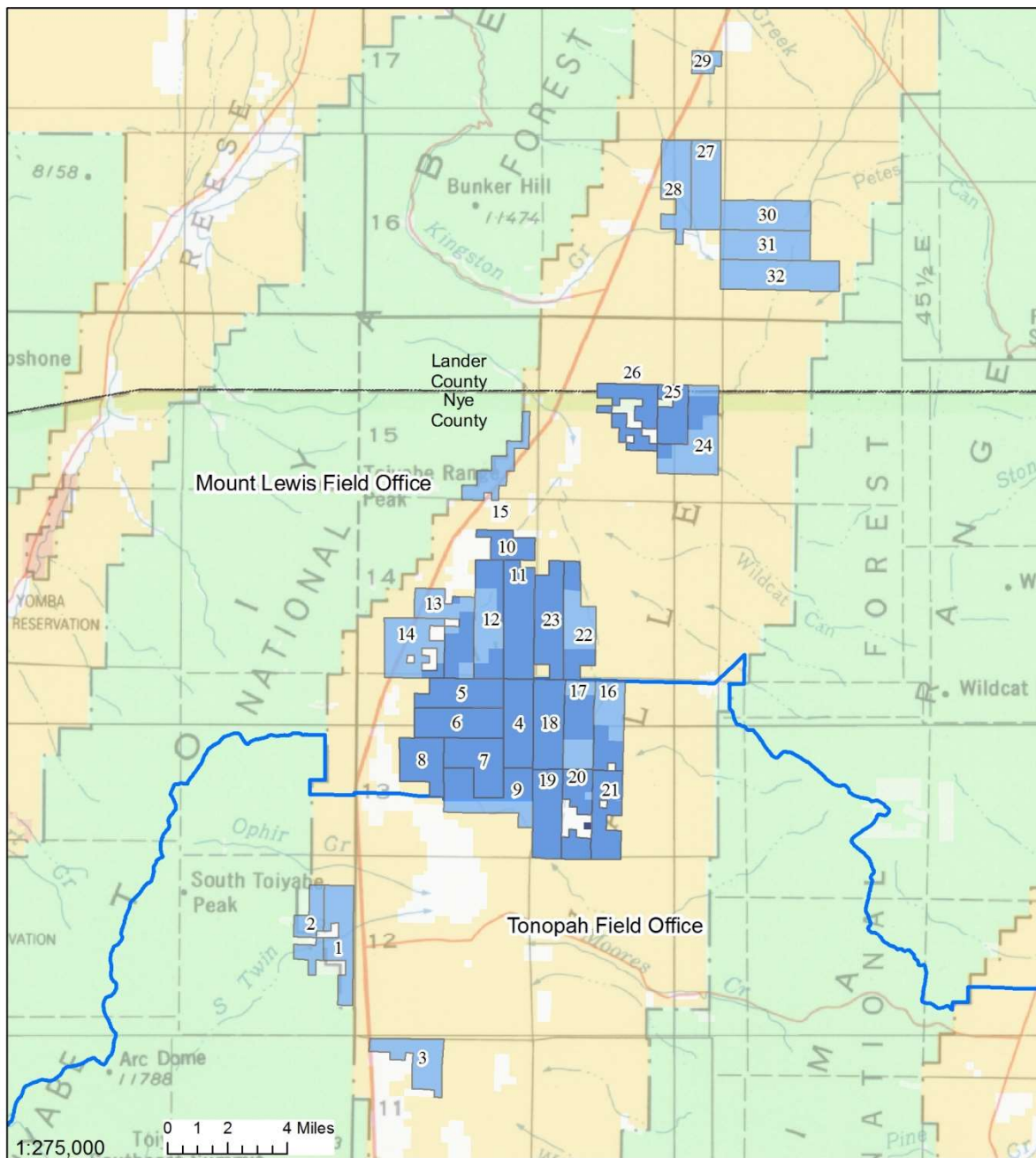
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Figure 3. Proposed lease parcels: Fish Creek Valley/Range. Parcels proposed for deferral under Partial Deferral Alternative: dark blue.



BMDO Oil & Gas Parcel Map
with Proposed Deferral Parcels
Big Smoky Valley

LEGEND

- OG Lease Sale Parcels-June 2017
- Recommended Deferral under Partial Deferral Alternative
- County Boundary
- Mount Lewis Field Office
- Tonopah Field Office
- Bureau of Indian Affairs
- Bureau of Land Management
- Forest Service
- Private



United States Department Of The Interior

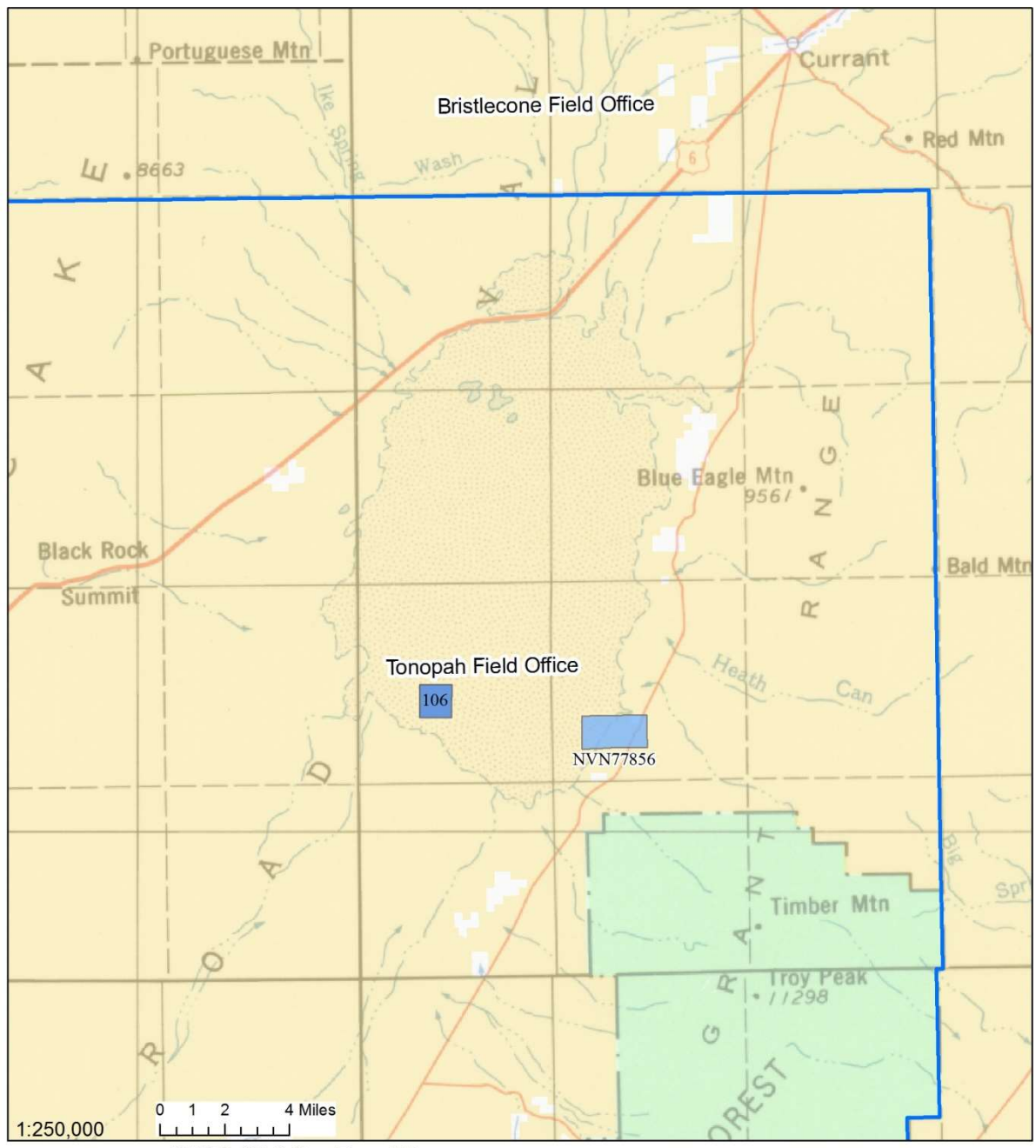
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Figure 4. Proposed lease parcels: Big Smoky Valley. Parcels proposed for deferral under Partial Deferral Alternative: dark blue.



**BMDO Oil & Gas Parcel Map
with Proposed Deferral Parcels
Railroad Valley**

LEGEND

- OG Lease Sale Parcels-June 2017
- Recommended Deferral under Partial Deferral Alternative
- County Boundary
- Mount Lewis Field Office
- Tonopah Field Office
- Bureau of Land Management
- Forest Service
- Private



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Figure 5. Proposed lease parcels and reinstatement parcel: Railroad Valley. Parcels proposed for deferral under Partial Deferral Alternative: dark blue.

1.2 Purpose and Need for Action, and Decision to be Made

Oil and gas leasing is necessary to provide oil and gas companies with new areas to explore and potentially develop. Leasing is authorized under the Mineral Leasing Act of 1920, as amended and modified by subsequent legislation, and regulations found at 43 CFR part 3100. Oil and gas leasing is recognized as an acceptable use of the public lands under FLPMA. BLM authority for leasing public mineral estate for the development of energy resources, including oil and gas, is described in 43 CFR 3160.0-3.

Offering parcels for competitive oil and gas leasing provides for the orderly development of fluid mineral resources under BLM's jurisdiction in a manner consistent with multiple use management and consideration for the natural and cultural resources that may be present. This requires that adequate provisions are included with the leases to protect public health and safety and assure full compliance with the spirit and objectives of NEPA and other federal environmental laws and regulations. This action is being initiated to facilitate Battle Mountain District's implementation of the requirements in Executive Order (EO) 13212 (2001) and the National Energy Policy Act (2005).

The BLM is required by law to consider leasing of areas that have been nominated for lease if leasing is in conformance with the applicable BLM land use plan, in this case the Tonopah RMP (Tonopah Field Office), approved in 1997, or the Shoshone Eureka RMP (Mt. Lewis Field Office), approved in 1986. The oil and gas parcels addressed in this EA cannot be considered for leasing without supplemental analysis of new information and changes in environmental conditions since these RMPs were approved, such as increased growth, locations of special status species, identification of traditional cultural properties, and recognition of other sensitive resources that were not addressed in the RMPs.

The Battle Mountain District must provide a recommendation to the Nevada BLM State Director regarding whether or not to recommend leasing all or part of the preliminary nominated parcel list, plus one reinstatement, in the upcoming June 2017 Competitive Oil and Gas Lease Sale. Under earlier BLM direction, if there were known resource conflicts that could not be addressed using a stipulation from the appropriate RMP, then the Battle Mountain District could recommend that all or part of a parcel be deferred from lease sale until the known resource conflict is resolved or the RMP is updated with stipulations addressing current known resource concerns. New BLM direction also provides the opportunity to apply the needed stipulations immediately via the EA process. The State Director will decide which parcels will be included in the June 2017 lease sale, and which stipulations will be applied, based on the analysis in this EA.

1.3 Land Use Plan Conformance

The Proposed Action and alternatives are in conformance with the Tonopah RMP and Shoshone Eureka RMP and their associated Record of Decisions and all subsequent applicable amendments.

Tonopah RMP (Tonopah Field Office), approved 1997

The Proposed Action and alternatives are provided for in the following Fluid Minerals Objective: "To provide opportunity for exploration and development of fluid minerals such as oil, gas, and geothermal

resources, using appropriate stipulations to allow for the preservation and enhancement of fragile and unique resources” (p.22).

It has been determined that the nominated lease parcels are a subset of “[The] total of 5,360,477 acres (88% of the Tonopah Assessment Area)[that] is open to fluid minerals leasing subject to standard terms and conditions” (RMP p.22). The RMP and parcel list have been reviewed for applicability of RMP decisions imposing restrictions on fluid minerals activities. Two parcels were found to fall within mule deer seasonal habitat; the appropriate stipulation is identified in EA Appendix B (see RMP Wildlife Determination 3, p. 8; Fluid Minerals Determination 3, p.23; Appendix 14, p. A-56; Map 34).

Shoshone-Eureka RMP (Mt. Lewis Field Office), approved 1986

The Proposed Action and alternatives are in conformance with the Shoshone Eureka RMP Part II, Section E, Management Actions Not Expressly Addressed by the Resource Management Plan, which includes Minerals Objectives and Management Decisions brought forward unaltered from the Management Framework Plan (Record of Decision p. 29). Minerals Objectives 1, 2 and 3 led to Management Decisions 1 through 5 for leasable minerals (oil and gas). The objectives are as follows:

- Objective 1: Make available and encourage development of mineral resources to meet national, regional and local needs consistent with national objectives for an adequate supply of minerals.
- Objective 2: Assure that mineral exploration, development and extraction are carried out in such a way as to minimize environmental and other resource damage and to provide, where legally possible, for the rehabilitation of lands.
- Objective 3: Develop detailed mineral resource data in areas where different resources conflict so that informed decisions may be made that result in optimum use of the lands.

Management Decision #4 specifically addresses oil and gas leasing and states, “All areas designated by the BLM as prospectively valuable for oil and gas will be open to leasing except as modified by other resources.” The RMP has been reviewed for modifications by other resources; none were identified for the nominated parcels.

Greater Sage-Grouse Approved Resource Management Plan Amendment

The Proposed Action and alternatives are in conformance with the 2015 Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment (GRSG Plan Amendment), which amends all BLM land use plans in the areas addressed, including the Tonopah and Shoshone-Eureka RMPs. Under the GRSG Plan Amendment, mapped habitat for Greater Sage-Grouse (GRSG) is designated as Sagebrush Focal Area (SFA), Priority Habitat Management Area (PHMA), General Habitat Management Area (GHMA), or Other Habitat Management Area (OHMA). The proposed parcels include some areas of PHMA, GHMA and OHMA. The Proposed Action and alternatives conform with the following applicable sections of the GRSG Plan Amendment.

- GRSG Plan Amendment Section 2.2, Management Decisions (MD) for Mineral Resources (MR), Unleased Fluid Minerals include the following MD applicable to oil and gas lease sales in PHMA and GHMA (others apply to SFA, geothermal, etc.):
 - MD MR 1: Review Objective SSS 4 and apply MDs SSS 1 through SSS 4 when reviewing and analyzing projects and activities proposed in GRSG habitat. [These would be applied at the time of additional project-specific analysis.]

- MD MR 3: In PHMAs outside of SFA, no waivers or modifications to an oil and gas lease no-surface occupancy stipulation will be granted.
- MD MR 5: In GHMAs, manage oil and gas and geothermal fluid minerals with moderate constraints, timing limitations, and controlled surface use stipulations.
- GRSG Plan Amendment Appendix G, Fluid Mineral Stipulations, Waivers, Modifications, and Exceptions, specifies the stipulations to apply to each habitat type and describes conditions under which exceptions, modifications, or waivers may or may not be applied. The stipulations have been applied to each part of a parcel with GRSG habitat, down to the 40-acre quarter-quarter of a section, using the highest applicable level of protection (e.g. if a quarter-quarter section includes PHMA and GHMA, stipulations for PHMA are applied). See EA Appendix B.

1.4 Relationship to Statutes, Regulations and Policy

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. Federal regulations and policies require the BLM to make public land and resources available based on the principle of multiple use. At the same time, it is BLM policy to conserve special status species and their habitats and ensure that actions authorized by the BLM do not contribute to the need for the species to become listed as threatened or endangered by the United States Fish and Wildlife Service (USFWS).

The BLM must adhere to Section 106 of National Historic Preservation Act (NHPA). The BLM also must comply with the Nevada State Historical 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. All activities will be subject to regulations including, but not limited to: EO 11990 Protection of Wetlands, EO 11988 Protection of Floodplains, the Clean Water Act, the Safe Drinking Water Act, the Onshore Oil and Gas Orders, Wild Free Roaming Horse and Burro Act, Endangered Species Act, Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act.

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

Regulations with particular relevance to the resource analyses in this EA include the following.

Executive Order 11988 – Floodplain management instructs all federal agencies to avoid development in a floodplain whenever possible.

Executive Order 11990 – Protection of wetlands instructs that “each agency shall take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands.” Specific to the purpose of this analysis, it instructs that “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.”

The 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.”

The Endangered Species Act (ESA), 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.” Species occurring in the Battle Mountain District that are listed as threatened, endangered, proposed, or candidate species under the ESA are shown in Appendix D. Although none are known to occur on the proposed lease parcels, Lease Notice NV-B-06-A-LN is attached to all parcels, stating that the lease area may now or hereafter contain listed species, in which case ESA compliance will be required (Appendix B).

BLM Special Status Species (SSS) lists are approved by the State Director for each state. This EA incorporates a February 2017 draft update of the most recent (2011) Nevada BLM Sensitive list for the Battle Mountain District (Appendix D). BLM SSS 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 those species’ habitats so as to promote their continuing viability. Lease Notice NV-B-06-A-LN also addresses BLM Sensitive species. BLM Manual 6840, Special Status Species Management provides additional guidance.

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.

Migratory Bird Treaty Act (MTBA) 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. Lease Notice NV-B-06-C-LN (Appendix B), attached to all parcels, addresses this requirement.

Bald and Golden Eagle Protection Act (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 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.

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. Wild horses and burros cannot be relocated somewhere else within the District and new Herd Management Areas (HMAs) cannot be created for them. Nor is BLM allowed to expand the HMAs beyond the 1971 Herd Area boundaries to replace habitat lost. The Code of Federal Regulations at 43 CFR 4700 provides guidance for management of wild horses and burros, as do handbooks and manuals including the Wild Horses and Burros Management Handbook H-4700-1.

1.5 Scoping and Public Involvement

The Battle Mountain District ID Team conducted internal scoping via interdisciplinary discussions and field visits which took place November 7 – December 12, 2016. The ID Team evaluated important natural and cultural resources, resource concerns and land use conflicts and, for each parcel, identified applicable stipulations in the existing RMPs and GRSG Plan Amendment (Section 1.3) and/or other applicable regulatory authority to be pointed out in a Lease Notice (Section 1.4). The ID Team also identified parcels to propose for deferral based on other resource concerns and land use conflicts that could not be resolved via stipulations in the existing RMPs as amended. For each proposed deferral, the ID Team recommended a new stipulation or other measure to address the issue either via an upcoming revised RMP (Partial Deferral Alternative) or via this EA process (Additional Resource Protection Alternative). The resulting lease notices and stipulations, and/or the recommended deferrals pending new stipulations, are provided in Appendices B and C.

Native American Coordination: The Battle Mountain District Native American Coordinator informed the Duckwater Shoshone Tribe, Yomba Shoshone Tribe, Te-Moak Shoshone Tribe, and the Descendants of the Big Smoky Valley, of the proposed lease sale parcels via letters sent on November 18, 2016.

The Duckwater Shoshone Tribe, in a letter to the District Manager dated November 30 2016, requested deferral of the same parcels as were deferred from the June 2016 Oil and Gas Lease Sale based on the Tribe’s concerns. BLM internal direction allows deferrals for one year based on the need to collect and analyze additional resource information, including ongoing tribal consultation. The same parcels may be proposed for longer-term deferral based on issues that are not addressed by stipulations in the existing RMP, in which case BLM would recommend that lands be deferred until identified issues has been resolved by either amending the RMP and/or by working through the issues (BLM Washington Office Instruction Memorandum 2010-117; BLM Nevada Instruction Memorandum NV-2016-037). The Native American Coordinator met with representatives of the Tribe on December 7, 2016 to further discuss the Tribe’s concerns.

Coordination with the Tribes is always ongoing. If any lease parcel is later found to contain resources protected under the NHPA, American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, Executive Order 13007, or other statutes and executive orders, BLM will not approve ground-disturbing activities that may affect such resources until completing its tribal consultation obligations; and may require modification to exploration or development proposals or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized, or mitigated.

Nevada Department of Wildlife input: During the same time period as internal scoping, Battle Mountain District provided the proposed lease sale parcel locations to Nevada Department of Wildlife (NDOW) and requested NDOW input. NDOW provided written comments via email recommending specific parcels for deferrals, timing stipulations or lease notices to address concerns regarding wildlife, important wildlife habitats, and rare plant communities; and recommending other resource protection measures to be applied at the time of any future exploration or development. NDOW sent information specific to parcels in Big Smoky Valley and Railroad Valley on December 2, 2016, and other locations on December 8, 2016.

Public comment period: A preliminary EA was released for public comment on January 5, 2017. A summary of comments and responses is provided in Appendix H.

1.6 EA Revisions

This EA has been revised as follows, in response to public comments and/or further internal review.

Throughout the document:

The Additional Resource Protection Alternative has been added. See EA Section 2.3 and Appendix C.2 for a full description. This alternative was added in response to new direction regarding proposing new stipulations, plus important wildlife habitat locations identified by USFWS and NDOW. The Affected Environment for wildlife (EA section 3.2.8) has been updated accordingly. Effects analyses for the new alternative have been added for all resources; and Appendix C.1 has been updated with the proposed new stipulations that would be applied via this EA process. The new stipulations would be in addition to those in Appendix B, which apply to all alternatives.

The preliminary EA stated that slopes greater than 40 percent were proposed for deferral pending a future stipulation to address these slopes. Battle Mountain District personnel later noticed discrepancies in the number of parcels referenced as meeting this criterion in different sections of the preliminary EA. They determined that resource specialists had proposed certain parcels for deferral based on this criterion where other resource concerns were also present, but other parcels also had these slopes. A slope model in GIS was used to identify slopes greater than 40 percent, which identified all or parts of 38 parcels. Descriptions of the Partial Deferral Alternative have been edited to indicate that “certain slopes greater than 40 percent” would be addressed.

Slopes greater than 30 percent were identified using a slope model in GIS for the Additional Resource Protection Alternative, finding 41 parcels with slopes greater than 30 percent (only three parcels showed slopes in the >30% to 40% range). The Additional Resource Protection Alternative would apply a stipulation addressing slopes greater than 30 percent to all 41 parcels.

Minor typographical and computational errors have been corrected throughout the document, including several in the legal land descriptions of parcels and parts of parcels to which stipulations and lease notices would apply (Appendix B). The approximate total acreage proposed for deferral under the Partial Deferral Alternative has been updated throughout the document from 104,176 in the preliminary EA to 104,668.

Chapter 3:

Additional Resource Protection Alternative effects analysis is added for all resources.

Additional potential mitigation measures, and residual impacts, have been added to some of the effects analyses in Chapter 3.

Greenhouse gases discussion has been updated per CEQ guidance transmitted by BLM January 12, 2017 in Permanent Instruction Memorandum 2017-003, which require an attempt to quantify greenhouse gas emissions that would result from combustion of the resource. See EA Section 3.2.1.

Discussion of Lahontan cutthroat trout, an ESA-listed Threatened species, has been added in response to input from USFWS.

Discussion of other BLM sensitive species has been added and corrected as needed, in response to input from USFWS and/or NDOW and subsequent investigation and discussion between BLM and these agencies.

- **Columbia spotted frog and Big Smoky Valley tui chub:** added discussion. USFWS indicated both species are found on parcel 14.
- **Pleasant Valley tui chub:** deleted. USFWS confirmed that a mapping error had identified them as present on parcel 14; this species is not found in the Battle Mountain District.
- **Fish Creek Springs tui chub:** added discussion.
- **Railroad Valley tui chub:** location corrected; not found in Parcel 106 but more than two miles from the parcel.
- **Speckled dace at Shipley Hot Spring:** added discussion.

Mule deer and pronghorn critical seasonal use areas have been added to proposed stipulations under the Additional Resource Protection Alternative per NDOW recommendations, and relevant details added to the discussion of these areas. BLM applied the new stipulations and lease notices to these seasonal habitats as identified in the 2014 NDOW Corporate Data Set. The proposed new stipulation for mule deer seasonal habitat applies the existing stipulation from the Tonopah RMP to parcels in the Mt. Lewis Field Office area.

Effects of the Partial Deferral Alternative to mineral resources were mistakenly copied from another resource analysis. This has been replaced with the intended analysis of effects to mineral resources.

The Environmental Justice analysis has been expanded to acknowledge a disproportionate low-income population in the surrounding area (see EA sections 3.2.17 and 4.2.17).

Appendix B

The stipulation for mule deer winter habitat, Tonopah Field Office was misidentified as applying to mule deer migration corridor, December 1 through May 1. This has been corrected to conform with the Tonopah RMP which provides for no surface activity on mule deer winter range, January 15 through May 15 (see RMP pages 8, 23, and A-56 and RMP Map 34).

Appendix C

Legal land descriptions of all parcels and parts of parcels proposed for deferral under the Partial Deferral Alternative have been added to Appendix C.1.

Additional Resource Protection Alternative: text of the proposed new stipulations has been added to Appendix C.2, along with the parcels to which they apply.

Appendix D

The table of special status species has been replaced with a draft February 2017 update provided by the BLM wildlife biologist on the ID Team.

Appendix H

Table of comments and responses: This table summarizes comments received during the public comment period and provides BLM responses.

Chapter 2. Proposed Action and Alternatives

2.1 Description of the Proposed Action

The Proposed Action is to offer for competitive sale all of the 106 original nominated parcels that the BLM Nevada State Office (NVSO) provided to Battle Mountain District for review. These parcels total approximately 195,732 acres in Diamond Range and Valley, Sulphur Spring Range, Garden Valley, Fish Creek Range and Valley, Big Smoky Valley, and Railroad Valley (Figures 1-5; legal land descriptions, Appendix A). A 1280-acre previously-leased parcel in Railroad Valley is proposed for reinstatement (Appendix A) and is included in this EA except where stated otherwise.

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 back to the federal government and the lease can be resold.

Stipulations and/or lease notices would be attached to each offered lease parcel (Appendix B). Stipulations are resource-protective restrictions that apply to a parcel as specified in the applicable RMP; notices inform prospective lessees of applicable statutes, regulations and policies (Sections 1.3, 1.4).

If leases are issued and lease operations are proposed in the future, BLM would conduct additional site-specific, project-specific NEPA analysis when an APD or other project application is submitted. In addition to the stipulations and notices attached to the parcel, Gold Book standards, guidelines and Best Management Practices (DOI and USDA 2007) would be applied.

2.2 Description of the Partial Deferral Alternative

This alternative would be the same as the Proposed Action except that parcels or parts of parcels would be proposed for deferral pending developing stipulations for an updated RMP that would address resources that are not adequately protected under either or both current RMPs, or otherwise resolving the concerns.

The Tonopah and Shoshone-Eureka RMPs, approved in 1986 and 1997 respectively, are scheduled to be replaced with a single updated RMP for the Battle Mountain District which would allow management to reflect the changing needs of the planning area. The process of developing the updated RMP was begun in 2010 and temporarily suspended while the GRSG Plan Amendment (see Section 1.3) was under development, to ensure that the RMP would be consistent with the extensive management direction it provides. The Battle Mountain District anticipates resuming the RMP update in 2017.

The parcels proposed for deferral, totaling approximately 104,668 acres and comprising approximately 53 percent of the original nominated acreage, would not be offered for competitive sale in 2017. The Partial Deferral Alternative is to offer for competitive sale the remaining 91,064 acres not proposed for deferral. Maps showing the parcels that would be deferred and the parcels that would remain available for sale under this alternative are provided in Figures 2-5. Appendix C.1 gives legal land descriptions of the deferred parcels, reasons for deferral, further explanation of the deferral process, and text of proposed stipulations for the updated RMP. The reinstatement parcel is not eligible for deferral.

In brief, the resources addressed by the proposed deferrals and proposed future RMP stipulations are wetlands, floodplains, playas, certain slopes greater than 40 percent, and a segment of Pony Express Trail which is both a National Historic Trail (NHT) and eligible to the National Register of Historic Places (NRHP). Most of the proposed future RMP stipulations would be No Surface Occupancy (NSO). See Appendix C.1.

2.3 Description of the Additional Resource Protection Alternative

This alternative would be the same as the Proposed Action except that parcels or parts of parcels would be offered with additional controlled surface use or timing limit stipulations, lease notice and engineering review requirements, in order to resolve certain resource concerns.

Total acres of parcels to which the new stipulations would be applied at the time of lease sale are approximately as follows:

- CSU for Water Resources: 58,000 acres
- CSU for Slopes >30%: 72,374 acres
- TL and LN for mule deer and pronghorn seasonal habitats, combined: 80,500 acres

See Appendix C.2 for full text of the proposed new stipulations and lease notice, and the parcels to which they would apply.

2.4 Description of the No Leasing Alternative

In accordance with BLM NEPA guidelines H-1790-1, Chapter 6, this EA evaluates a No Leasing Alternative Action. This alternative forms a baseline for assessing and comparing the potential impacts of the other alternatives. Under this alternative, no parcels on the Battle Mountain District would be offered for lease sale in June 2017, and the reinstatement parcel would not be reinstated. Any new oil and gas development would take place on parcels that were leased in other lease sales. There are currently 186 authorized leases totaling 305,005 acres in the Battle Mountain District.

2.5 Oil and Gas Exploration and Development Trends and Projections

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 the RFD scenario, which defines the number of wells and amount of surface disturbance likely to occur (Section 2.5.1), and the assumption that current technologies, methods, and requirements will be applied in the foreseeable future (Section 2.5.2). Because leases expire after 10 years if production is not achieved, a 10-year time period is considered.

2.5.1 Reasonably Foreseeable Development (RFD) Scenario

Oil production data from the Nevada Division of Minerals show that oil and gas production in the state has fallen off since the early 1990s and has flattened out at around 300,000 barrels per year over the last several years. This section discusses projected exploration and development scenarios used in the past in the Battle Mountain District, and adjustments to those scenarios based on actual activity in recent years. These result in the RFD scenario used in this EA.

Tonopah Field Office: past estimates, actual activity, and adjusted estimates

Nine of the 106 nominated lease sale parcels are located in the Tonopah Field Office (TFO) area, including one that overlaps the boundary with Mt. Lewis Field Office (MLFO). The TFO parcels total approximately 16,401 acres, or 8% of the total nominated acreage; plus the 1280-acre reinstatement parcel.

As part of the 1997 Tonopah RMP, the BLM developed an RFD scenario for oil and gas exploration and development through the year 2014. That RFD projected that 30 wildcat wells (exploratory wells outside of established oil fields) would be drilled for a total disturbance of 296 acres. It also projected a number of additional production wells in established oil fields, and estimated a total future surface disturbance of 131 acres in those oil fields. The 1997 RFD also projected development of two additional oil fields with a total future disturbance of 944 acres. This was a conservative approach, as it was impossible to predict with certainty how resource development would occur in the future.

Compared to the actual amount of activity, the oil and gas RFD for the 1997 Tonopah RMP greatly overestimated the amount of exploration and production activity and associated surface disturbance. From 1997 to 2015 a total of 56 exploration wells were authorized; 22 of these authorizations expired prior to an exploration well being drilled. A total of five became production wells. The last well was drilled in 2013. No new oil fields have been developed in the TFO since 1997. The average amount of surface disturbance associated with the exploration wells (sumps, road construction, pads, etc.) was approximately 3.3 acres per well, for an overall disturbance of approximately 50 acres.

The interaction of prices, markets, technology, environmental concerns, and viability of the potential oil and gas resource in the Battle Mountain District all play a role in estimating future surface disturbance

related to oil and gas exploration and production. Based on past history and considering advancements in drilling and well stimulation techniques, it would be highly speculative to assume that production wells and additional oil fields would be developed within the TFO in areas other than Railroad Valley in the eastern part of the field office area, where the potential is moderate to high and where current well fields exist.

The recent exploration and development history provides a basis for estimating a low development potential for oil and gas disturbance that might indirectly result from the June 2016 Competitive Oil and Gas Lease Sale. Conservatively, based on historic information and anticipated activity, over the next ten years, approximately 20 exploration wells with approximately 50-75 acres of associated surface disturbance could be expected to occur in the TFO, assuming approximately 3.3 acres per well (66 acres) and allowing for a range of variation.

Mount Lewis Field Office: past estimates, actual activity, and adjusted estimates

The majority of the nominated lease sale parcels are located in the MLFO area: 96 parcels totaling approximately 179,331 acres, or 92% of the total nominated acreage.

According to the 2006 EA for Oil and Gas Leasing and the 2008 EA for Oil and Gas Leasing within the Western Portion of the Shoshone-Eureka Assessment Area, the overall potential for oil and gas exploration and development in this area has been previously determined to be low to moderate. The western portion of the Assessment Area was considered to have a lower potential when compared to that of the eastern portion. The eastern portion of the Shoshone-Eureka Assessment Area was considered to have moderate potential because it is located on a strike between Pine Valley and Railroad Valley, the two major production areas in the State; and the geologic setting is similar to those areas. The RFDs for these EAs estimated a total surface disturbance associated with oil and gas exploration/production of approximately 680 acres for the entire MLFO Assessment Area, which constitutes 4.5 million acres.

Compared to actual acres of disturbance associated with oil and gas exploration/production within the MLFO during the projected period described below, those RFDs overestimated the amount of surface disturbance. While oil and gas interest has increased over the last 25 years in the MLFO area, very few exploratory wells have been drilled; an average of less than one exploration well was drilled per year between the years of 1980 and 2003. Exploration interest since this time has focused on the eastern portion of the MLFO, specifically in Eureka County, which is consistent with the geologic potential of the area. Since 2003, there have only been four exploration wells authorized in the MLFO. The last of these was drilled in 2013. All four wells have since been plugged. The potential for oil and gas exploration and production in the MLFO can also be considered low. Conservatively, over the next ten years, based on previous and anticipated activity and interest, about 5 exploration wells and 15-25 acres of surface disturbance associated with oil and gas exploration/production activity could be expected to occur in the MLFO, again estimating 3.3 acres disturbance per well (16.5 acres) and allowing for a range of variation.

RFD for Battle Mountain District (Tonopah and Mt. Lewis Field Offices)

Estimates for future surface disturbance for the two field offices comprising the Battle Mountain District can be added for a District-wide RFD. Conservatively, based on historic information and anticipated activity, approximately 25 wells would be drilled and 65-100 acres of surface disturbance associated with

potential oil and gas exploration and production activities could be expected to occur in the Battle Mountain District over the next ten years. The surface disturbance estimate used to analyze the alternatives in this EA is based on this RFD scenario.

2.5.2 Types of Activities Anticipated

Despite the low predicted potential of the proposed lease parcels, at any point during the 10-year term of the lease, the lessee, or operator may submit specific plans for some level of proposed development. Typical oil and gas development operations occur in phases, each of which occurs in a more or less predictable sequence that is contingent on the success or failure of the previous phase. This section discusses types of activities that may be anticipated based on current technology and trends, and that are therefore taken into account as potential causes of impacts in this EA's analysis of alternatives.

Geophysical Exploration

Geophysical exploration uses physical methods at the surface of the Earth to obtain detailed information about physical properties of the subsurface. A variety of exploration methods are employed, including placing electrodes or geophones in the ground; detonating explosives to create shockwaves; and employing specially constructed off-road vehicles to produce vibrations. Currently, the most commonly used method in eastern Nevada is the seismic vibrator technique (formerly trademarked as Vibroseis), which uses a large vehicle-mounted "thumper" or "shaker" to generate a controlled vibration which is recorded by small, typically hand-placed sensors. This is repeated in a grid pattern across an area, and resulting seismogram readouts provide information about subsurface properties.

Exploration Drilling

Exploratory drilling (a wildcat well) begins development of a lease. An APD is filed with the BLM. A field examination is conducted by BLM resource specialists and NEPA review is completed before a drilling permit is issued. An access road and a well pad are constructed for each well, if needed. Total disturbance attributed to drilling an exploration well is usually limited to less than 10 acres for the pad and access road (averaging 3.3 acres in the TFO area; see Section 2.4.1).

An operator must secure enough water to drill the well and to maintain dust control on the pad and access road(s). Conventional oil wells in Nevada are typically drilled between 4,000 and 12,000 feet in depth and can typically require 50,000-300,000 gallons of fresh water (Appendix E).

Statistically, in Nevada over 95% of exploration wells have been dry holes, that is, not producing oil or gas in commercially worthwhile amounts.

In-Field Drilling

In-field drilling of additional exploration wells typically occurs in order to define the limits of the oil or gas reservoir when initial drilling has located oil or gas. The process of in-field drilling is the same as that employed for initial exploratory drilling, although new roads and pads may not be required in every instance.

Production

Production only occurs if oil or gas can be transported to a market and sold at a profit. In the Battle Mountain district, pumped oil is generally piped a short distance for temporary storage, then trucked to a refinery for processing. This basic method of transport is unlikely to change, due to the small quantity of resource estimated to be present in the District. Production facilities may include one or more of the following: a well head; pumping equipment; a separation system; pipelines; a metering system; storage facilities; water treatment and injection facilities; cathodic protection systems; electrical distribution lines; compressor stations; communication sites; roads; salt water disposal systems; dehydration sites; and fresh and salt water plant sites.

Well Stimulation and Hydraulic Fracturing (HF)

Well stimulation may be used to enhance oil recovery. Several methods of well stimulation are available and are common practice in today's industry. HF is one of these methods that may be reasonably foreseeable for leases proposed for this sale. HF is the process of applying high pressure fluid to a subsurface formation via a wellbore, to the extent that the pressurized fluid opens fractures in the rock. The opened fractures are propped open with a "proppant," a granular material (typically sand, treated sand or man-made ceramic materials), to enhance fluid connectivity between the wellbore and formation. The process can increase the yield of a well and enable production of oil and gas from tight formations that would not otherwise be economically feasible to develop.

The conventional HF process began to be developed experimentally in 1947, was first applied commercially in 1949, and has been used routinely since 1950. HF is sometimes combined with horizontal drilling in which a drill hole is completed as a "lateral" parallel with the rock layer containing the fluid mineral to be extracted. (High-volume hydraulic fracturing is a more recent method typically used in certain types of "unconventional" geologic formations such as shale oil and shale gas, and is not reasonably foreseeable in the Battle Mountain District.)

Appreciable amounts of water (800,000 – 10,000,000 gallons) can be consumed during HF operations (Appendix E). Much of this water returns to the surface as backflow and can be recycled for reuse on other wells or projects. To date, Nevada has documented the use of HF on four separate vertical wells where less than 350,000 gallons of freshwater was consumed per well.

HF procedures for mitigating potential environmental impacts may include the following:

- Wells have multiple casing and sealed in place with cement between the wellbore and the formation. Wellbore integrity is tested throughout the process.
- HF fluids are either contained in above ground tanks or a lined pit.
- HF fluids are recovered to a large degree in "flowback" or produced water when the well is tested or produced.
- All recovered fluids are generally handled by one of four methods:
 - Underground injection;
 - Captured in steel tanks and disposed of in an approved disposal facility;
 - Treatment and reuse;
 - Surface evaporation pits.

Please refer to the Hydraulic Fracturing White Paper (Appendix E) for additional information on HF.

In addition, the State of Nevada has adopted new Hydraulic Fracturing Regulations (NRS 522 & NAC 522; see Appendix F). These regulations are more stringent than federal requirements, and would be applicable to any HF operation proposed in the state.

Well Abandonment

Well abandonment may be temporary or permanent. Wells are sometimes abandoned because the cost of constructing pipelines or roads needed for marketing is not justified by the quantity of oil discovered. These wells may later be reentered when their production can be marketed. Permanent abandonment of a well occurs when the well is determined to no longer have a potential for economic production, or when the well cannot be used for other purposes.

Reclamation

Reclamation includes removing all manmade objects and restoring the surface disturbance area to pre-disturbance conditions. In the case of a producing well, interim reclamation is conducted following the completion of drilling and well stimulation; final reclamation would be done after production has ceased. In the case of exploration wells which do not find economically recoverable amounts of oil, initial reclamation (re-contouring) is usually completed the following year, which provides for sufficient time for the reserve pit (which contains drilling fluids) to dry out. After re-vegetation of the site is successful, reclamation is complete.

Gold Book Standards and Guidelines

The publication *Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development* (DOI and USDA 2007; commonly referred to as The Gold Book) provides information on the requirements for obtaining permit approval and conducting environmentally responsible oil and gas operations on Federal lands. In 2007 the Gold Book was updated to incorporate changes resulting from the new Onshore Oil and Gas Order No. 1 regulations. The revised 2007 Gold Book (4th Edition) can be accessed online at

https://www.blm.gov/wo/st/en/prog/energy/oil_and_gas/best_management_practices/gold_book.html

All applicable Gold Book standards, guidelines and Best Management Practices (BMPs) would be required for any future oil and gas exploration or development on the proposed lease parcels.

Chapter 3. Affected Environment and Environmental Consequences

3.1 Analysis Process Overview

This section provides an overview of the effects analysis process. As explained in Section 2.4, since there is no specific project proposal at the time of a lease sale, likely effects are predicted based on a reasonable future development scenario and current knowledge and technologies. The methods and assumptions, time period, analysis area, and other terms used for this analysis are summarized in sections 3.1.1 to 3.1.5.

The next step is to determine which resources may be affected. The ID Team considers all resources that various supplemental authorities require BLM to address in EAs (Section 3.1.6), and other resources deemed appropriate for evaluation (Section 3.1.7). The ID Team determines whether each resource is not present; is present but clearly would not be affected; or is present and may be affected. If it is not present or would not be affected, the rationale is provided here and the resource is not discussed further.

3.1.1 Methods and Assumptions

As described in detail in Chapter 2, Proposed Action and Alternatives, the effects analysis in this chapter compares the potential effects of three alternatives, briefly restated here. This analysis assumes a reasonably foreseeable development (RFD) scenario described in detail in Section 2.4.1, under which approximately 65-100 acres of surface disturbance associated with potential oil and gas exploration and production activities could be expected to occur in the Battle Mountain District over the next ten years; this assumption is applied to the alternatives as follows.

Proposed Action: Offer for competitive lease sale in June 2017 all 106 nominated parcels (approximately 195,732 acres) and reinstate the reinstatement parcel (1280 acres). Stipulations and notices would be attached to lease parcels. If leases are issued and lease operations are proposed in the future, BLM would conduct additional site-specific, project-specific NEPA analysis and Gold Book standards, guidelines and BMPs would be applied. Over the next 10 years, a total anticipated surface disturbance of 65-100 acres could occur on leased parcels in the Battle Mountain District including these 107 parcels.

Partial Deferral Alternative Action: Parcels or parts of parcels totaling approximately 104,668 acres are proposed for deferral pending resolving important resource concerns in these parcels, generally by establishing appropriate stipulations or closures in an updated RMP (Appendix C.1). Under this alternative these parcels would not be offered for competitive lease sale in 2017, and for the purpose of this analysis it is assumed that they would not be developed, although they could be proposed for lease sale again once resource concerns are resolved. The remaining 91,064 acres would be offered in 2017 as under the Proposed Action. Over the next 10 years, a total anticipated surface disturbance of 65-100 acres could occur on leased parcels in the Battle Mountain District including these 91,064 acres.

Additional Resource Protection Alternative: The same parcels would be offered for lease sale as under the Proposed Action, but with several additional resource-protective stipulations applied (see Appendix

C.2). Over the next 10 years, a total anticipated surface disturbance of 65-100 acres could occur on leased parcels in the Battle Mountain District including these parcels.

No Leasing Alternative Action: No parcels would be offered for lease sale in June 2017. Any new oil and gas development would take place on parcels that were leased in other lease sales. Over the next 10 years, a total anticipated surface disturbance of 65-100 acres would occur elsewhere in the District, on parcels offered in other lease sales.

Types of disturbance that could occur are assumed to be those associated with technologies currently in use in geologically similar areas, as described in Section 2.4.2; and would be limited by the stipulations applied, which vary by alternative (see Appendices B and C).

3.1.2 Direct and Indirect Effects

An EA must analyze and describe the direct effects and indirect effects of the proposed action and alternatives on the quality of the human environment. Direct effects “are caused by the action and occur at the same time and place,” while indirect effects “are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable” (40 CFR 1508.8). There would be no direct impacts from issuing new oil and gas leases because leasing does not directly authorize ground disturbing activities. However, if a lease is sold, the lessee retains certain irrevocable rights. For example, according to 43 CFR § 3101.1-2, once a lease is issued to its owner, that owner has the "right to use as much of the lease lands as is necessary to explore for, drill for, mine, extract, remove and dispose of the leased resource in the leasehold" subject to specific nondiscretionary statutes and lease stipulations. Thus, a lease sale makes the offered parcels available to indirect effects (occurring at a later time). This chapter addresses those indirect effects. If an APD is received for a leased parcel, additional site-specific, project-specific NEPA analysis would address direct and indirect effects of any action and alternatives proposed at that time.

3.1.3 Time Period Considered

The time period considered in this analysis is ten years, June 2017 to June 2027. This time period was chosen because it represents the initial term for an oil and gas lease, which expires at that time if it has not been developed. If there is a proposal to develop a lease parcel, then additional project- and site-specific NEPA analysis would consider direct and indirect effects for a time frame appropriate to that project.

3.1.4 Analysis Area

The term Analysis Area in this chapter refers to the parts of the BLM Battle Mountain District in which the lease parcels occur, in central Nevada. It includes northeastern parts of the Tonopah Field Office area, in Nye County; and southern and eastern parts of the Mt. Lewis Field Office area, in Eureka and Lander counties (see map, Figure 1).

3.1.5 Other Terms Used

The term “mitigation” as used in this document refers to resource protection measures that could be included in a specific proposal and implemented when leases are developed.

The terms “effects,” “impacts,” and “consequences” are synonyms and may be used interchangeably in this document.

A list of abbreviations and acronyms used in this document is included in Appendix G.

3.1.6 Supplemental Authorities Considered

To comply with NEPA, BLM is required to address specific elements of the environment that are subject to requirements specified in statute, regulation or by executive order (BLM 1988, BLM 1997, BLM 2008). These requirements are known as “supplemental authorities.” Table 1 outlines these elements.

Table 1. Supplemental authorities considered in the EA.

Supplemental Authority Element	Not Present	Present/Not Affected	Present/May be Affected	Rationale
Air quality, climate change and greenhouse gases			√	See Sections 3.2.1 and 4.2.1
Areas of Critical Environmental Concern	√			The proposed lease parcels are not located in or near any Area of Critical Environmental Concern.
Cultural resources			√	See Sections 3.2.11 and 4.2.11
Environmental justice		√		A slight, positive economic effect to low-income populations is expected. See Sections 3.2.17 and 4.2.17.
Farmlands, prime or unique	√			There are no Prime or Unique Farmlands, as defined by the Farmland Protection Policy Act, in the Battle Mountain District.
Noxious weeds and invasive, non-native species			√	See Sections 3.2.7 and 4.2.7
Native American cultural concerns			√	See Sections 3.2.12 and 4.2.12
Floodplains			√	See Sections 3.2.4 and 4.2.4
Riparian/wetlands			√	See Sections 3.2.4 and 4.2.4; see 3.2.8 and 4.2.8 for riparian/wetland wildlife habitat
Threatened or endangered species			√	See Sections 3.2.8 and 4.2.8
Migratory birds			√	See Sections 3.2.8 and 4.2.8
Waste, hazardous/solid			√	See Sections 3.2.18 and 4.2.18
Water quality			√	See Sections 3.2.4 and 4.2.4
Wild and Scenic Rivers	√			The proposed parcels are not located in or near any designated Wild and Scenic Rivers.

Supplemental Authority Element	Not Present	Present/Not Affected	Present/May be Affected	Rationale
Wilderness and Wilderness Study Areas (WSAs)	√			None of the proposed parcels are within or near a designated Wilderness or WSA, and no alternative would affect such lands.
Lands with wilderness characteristics	√			2012-2013 inventory data (to be updated at the time of any APD) show no wilderness characteristics in proposed lease parcels.

3.1.7 Other Resources Considered

Other resources that have been considered in this EA are listed in Table 2.

Table 2. Other resources considered in the EA.

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. Any potential impacts from subsequent exploration and development activities would be analyzed under a separate, site specific analysis.
Forestry and woodland products			√	See Sections 3.2.6 and 4.2.6
Geology and minerals			√	See Sections 3.2.15 and 4.2.15
Land use authorization			√	See Sections 3.2.16 and 4.2.16
Paleontological resources			√	See Sections 3.2.3 and 4.2.3
Rangeland resources			√	See Sections 3.2.10 and 4.2.10
Recreation			√	See Sections 3.2.13 and 4.2.13
Socioeconomic values			√	See Sections 3.2.17 and 4.2.17
Soils			√	See Sections 3.2.2 and 4.2.2
Specially designated areas			√	National Historic Trail; see Recreation sections, 3.2.13 and 4.2.13
Special status species			√	See Sections 3.2.8 and 4.2.8; list, Appendix D
Vegetation			√	See Sections 3.2.5 and 4.2.5
Visual resources			√	See Sections 3.2.14 and 4.2.14
Wild horses and burros			√	See Sections 3.2.9 and 4.2.9
Wildlife			√	See Sections 3.2.8 and 4.2.8

3.2 Environmental Effects of the Alternatives

3.2.1 Air Quality, Climate Change, and Greenhouse Gases

These resources are interrelated and are being combined 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 within Nevada contribute to local and regional air pollution. Urbanization and tourism create emissions that affect air quality over a wide area. Air pollutants generated by motor vehicles include tailpipe emissions and dust from travel over dry, unpaved road surfaces. Strong winds can generate substantial amounts of windblown dust. Air pollution emissions are characterized as point, area, or mobile. Point sources are large, stationary facilities such as power plants and manufacturing facilities and are accounted for on a facility by facility basis. Area sources are smaller stationary sources and, due to their greater number, are accounted for by classes. Production emissions from an oil and gas well and dust from construction of a well pad would be considered area source emissions. Mobile sources consist of non-stationary sources such as cars and trucks. Mobile emissions are further divided into on-road and off-road sources. Engine exhaust from truck traffic to and from oil and gas locations would be considered on-road mobile emissions. Engine exhaust from drilling operations would be considered off road mobile emissions.

Affected Environment

The Clean Air Act required the Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. These NAAQS for criteria pollutants, include carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM₁₀ and PM_{2.5}), sulfur dioxide (SO₂), and lead (Pb). Exposure to air pollutant concentrations greater than the NAAQS has been shown to have a detrimental impact on human health and the environment. The EPA has delegated regulation of air quality under the federal Clean Air Act to the State of Nevada. Along with the criteria pollutants, the release of hazardous air pollutants (HAPs) is regulated. HAPs are chemicals that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental effects. EPA currently lists 188 identified compounds as hazardous air pollutants, some of which, such as benzene, toluene, and formaldehyde can be emitted from oil and gas development operations. Ambient air quality standards for HAPs do not exist; rather, these emissions are regulated by the source type, or specific industrial sector responsible for the emissions.

Ambient air quality in the affected environment (i.e. compliance with the NAAQS) is demonstrated by monitoring for ground level (i.e. receptor height) atmospheric air pollutant concentrations. In general, the ambient air measurements show that existing air quality in the region is good. For more information on pollutant monitoring values, including the other criteria pollutants not shown below, please visit the EPA's Air Data website at www.epa.gov/airdata.

The Battle Mountain District has existing sources of pollution that vary mainly from regional ozone to particulate matter. Regional ozone is typical in the western states as forest fires, transport from shipping lanes, electric power generation and a conglomerate of other sources combine under certain

meteorological conditions. Particulate matter is another issue during dust storms or when dust is raised by other activities in this dry region.

Climate is the composite of generally prevailing weather conditions of a particular region throughout the year, averaged over a series of years. Climate change includes both historic and predicted climate shifts that are beyond normal weather variations.

Worldwide greenhouse gas (GHG) emissions are estimated to be Global Warming Potential (GWP; see Table 3) 15,347,480,381 tons per year (tpy) mainly from CH₄ (International Panel on Climate Change Fourth Assessment Report). The Nevada Department of Mineral website (<http://data.nbmng.unr.edu/Public/OilGas/ProductionSummaries>) reports there were 50,662,701 barrels of oil produced in Nevada between 1954 and 2009 (the most recent data available); 44 active oil wells in the state; and one oil refinery. None are identified as gas wells. There is no systematic pipeline system in Nevada to transport gas from the well sites to a major distribution site. Gas produced in Nevada wells is primarily used to power onsite pumping equipment. There are significant uncertainties associated with estimates of Nevada's GHG emissions from this sector. This is compounded by the fact that there are no regulatory requirements to track CO₂ or CH₄ emissions. Therefore, estimates (other than those listed on Table 3) of GHG emissions measurements in Nevada are not possible at this time.

Environmental Consequences

Proposed Action

While the act of leasing the parcels would produce no substantial air quality effects, potential future development of the lease could lead to increases in area and regional emissions. Since it is unknown if the parcels would be developed, or the extent of the development, it is not possible to reasonably quantify potential air quality effects through dispersion modeling or another applicable method at this time. The timing, specific locations, and construction and production equipment specifications and configurations are also unforeseeable at this time. Additional project-specific air effects will be addressed in a subsequent analysis when an APD or other project is proposed. All proposed activities including, but not limited to, exploratory drilling activities would be subject to applicable local, State, and Federal air quality laws and regulations.

The BLM National Operations Center retained the Kleinfelder Team (which consisted of staff from Kleinfelder, Inc. and ENVIRON International Corporation) to prepare an emissions inventory estimate of criteria pollutants, GHG, and key HAPs for a representative oil and gas well in the western United States. The emissions inventory was designed to be used by BLM staff, such as NEPA planners, air resource specialists, and natural resource specialists, to evaluate emissions from small oil and gas projects, which for purposes of this inventory would involve approximately five wells or less.

Defining a "representative" oil and gas well for the entire western US was extremely challenging as there are numerous variables, even within a single basin and sub-basin, that can materially affect the emissions. Such variables include oil and gas composition, difficulty drilling the geologic formation, oil and gas production rate, equipment at the well site, emission controls, produced water that may be associated with oil and gas production, among many others. Accordingly, to develop such an inventory, five different well types (three natural gas wells and two oil wells) representative of five different major oil and gas

basins in the western US were evaluated. In order to develop the emission inventories, information that was not proprietary, not draft, and not pre-decisional was reviewed for the five selected basins plus other oil and gas developments in the western US. The characteristics of the five basins selected are similar to a large portion of the oil and gas produced in the western United States. Table 3, below, is taken from this March 2013 report: Erbes, Air Emissions Inventory Estimates for a Representative Oil and Gas Well in the Western United States.

Table 3. Air emissions inventory estimates for representative oil or gas wells in the western U.S.

Well Type	Gas	Gas	Gas	Oil	Oil
Pollutant	Uinta/Piceance (tpy)	Upper Green River (tpy)	San Juan (tpy)	Williston (tpy)	Denver (tpy)
NO _x	15.6	14.6	5.6	15.6	6.3
CO	3.8	3.9	3.1	8.0	3.4
VOC	3.4	5.2	5.3	17.6	6.7
SO ₂	0.0004	0.0004	0.001	0.001	0.001
PM ₁₀	6.9	6.7	6.8	6.9	6.6
PM _{2.5}	0.8	0.8	0.5	0.8	0.5
CO ₂	2,552.1	2,552.1	651.0	3156.4	1,049
CH ₄	12.2	14.1	6.1	16.6	1.8
N ₂ O	0.05	0.05	0.04	0.6	0.04
GWP	2,825	3,194	791	3,682	1,099
Benzene	1.4	1.5	1.4	1.5	1.4
Toluene	1.0	1.2	1.0	1.0	1.0
Ethylbenzene	0.00003	0.01	0.0008	0.0008	0.0006
Xylene	0.6	0.7	0.6	0.6	0.6
n-Hexane	7.5	7.5	7.5	7.9	7.5
Total HAPs	10.4	10.9	10.5	11.0	10.5

Note: Sums may not precisely total due to round off differences. A value of 0.00 indicates that pollutant is not emitted or emitted in *de minimis* amounts. If there is a non-zero value, at least one significant figure is reported. Greenhouse gas emissions are in terms of short tons CO₂, CH₄, and N₂O. Global Warming Potential (GWP) is in terms of short tons of CO₂ equivalent (CO₂e), using a GWP of 1 for CO₂, 21 for CH₄, and 310 for N₂O (Erbes, 2013).

The act of leasing would not result in changes to air quality. However, should the leases be issued, development of those leases could impact air quality conditions. It is not possible to accurately estimate potential air quality impacts from the project by computer modeling, due to the variation in emission control technologies as well as construction, drilling, and production technologies applicable to oil versus gas production and used by various operators, so this discussion remains qualitative.

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

deposition, visibility), particularly as they might affect regional Class 1 areas (National Parks and Wilderness Areas).

Any subsequent exploration or development activity could include soil disturbances resulting from the construction of well pads, access roads, pipelines, power lines, and drilling. Any disturbance is expected to cause increases in fugitive dust and potentially inhalable particulate matter (specifically PM₁₀ and PM_{2.5}) in the project area and immediate vicinity. Particulate matter, mainly dust, may become airborne when drill rigs and other vehicles travel on dirt roads to drilling locations. Air quality may also be affected by exhaust emissions from engines used for drilling, transportation, gas processing, compression for transport in pipelines, and other uses. These sources will contribute to potential short and long term increases in the following criteria pollutants: carbon monoxide, ozone (a secondary pollutant, formed photochemically by combining VOC and NOX emissions), nitrogen dioxide, and sulfur dioxide. Non-criteria pollutants (for which no national standards have been set) such as carbon dioxide, methane, nitrous oxide, air toxics (e.g., benzene), and total suspended particulates could also be emitted. Certain pollutants may be significant when evaluating air quality related values (AQRV) for effects on visibility and atmospheric deposition. Significance will depend greatly on the proximity to sensitive receptors, area meteorology, and the background levels of AQRV at any sensitive receptor. Dust control measures, such as applying a layer of gravel over the travel surfaces, watering travel surfaces, and reducing speed along the roadways can be very effective in mitigating dust issues.

Well development includes emissions from earth-moving equipment, vehicle traffic, drilling, and completion activities. NOX, SO₂, and CO would be emitted from vehicle tailpipes. Fugitive dust concentrations would increase with additional vehicle traffic on unpaved roads and from wind erosion in areas of soil disturbance. Drill rig and fracturing engine operations would result mainly in NOX and CO emissions, with lesser amounts of SO₂. These temporary emissions would be short-term during the drilling and completion times.

During well production there are continuous emissions from separators, condensate storage tanks, and daily tailpipe and fugitive dust emissions from operations traffic. During the operational phase of any future well field development, NOX, CO, VOC, and HAP emissions would result from the long-term operation of condensate storage tank vents, and well pad separators. Additionally, road dust (PM₁₀ and PM_{2.5}) would be produced by vehicles servicing the wells.

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

The construction, drilling, completion, testing, and production of an oil and gas well could result in various emissions that affect air quality. Construction activities result in emissions of particulate matter. Well drilling activities result in engine exhaust emissions of NOx, CO, and VOC. Completion and testing

of the well result in emissions of VOC, NOX, and CO. Ongoing production results in the emission of NOx, CO, VOC, and particulate matter.

During exploration and development, “natural gas” may at times be flared and/or vented from conventional, coal bed methane, and shale wells. The gas is likely to contain volatile organic compounds that could also be emitted from reserve pits, produced water disposal facilities, and/or tanks located at the site. The development stage may likely include the installation of pipelines for transportation of raw product. New centralized collection, distribution and/or gas processing facilities may also be necessary. The decision to offer the identified parcels for lease would not result in any direct emissions of air pollutants. However, any future exploration or development of these leases will result in emissions of criteria, HAP and GHG pollutants. The additional emissions could result in an incremental increase in overall emissions of pollutants, in the region depending on any contemporaneous activities occurring at the same time when potential exploration and development occurring on the lease would happen.

The administrative act of leasing all or part of 106 parcels covering 195,732 acres would not result in any direct GHG emissions. However, in regard to future development, the assessment of GHG emissions and climate change is in its formative phase. While it is not possible to accurately quantify potential GHG emissions in the affected areas as a result of making the proposed tracts available for leasing, some general assumptions can be made: offering the proposed parcels may contribute to drilling new wells.

Development Direct Greenhouse Gas Emissions

Although no GHG emissions would result from the Proposed Action, which is administrative in nature, BLM foresees that the primary sources of greenhouse gases associated with oil and gas exploration and production are carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O).

The RFD scenario developed for this lease EA is a maximum of 25 wells drilled within the parcels in the Battle Mountain District. The number of wells that could be drilled in any given area is unknown but potential emissions would be multiplied appropriately. For example, using the information from Erbes (2013), the drilling of 25 wells would produce between 19,775 tons and 92,050 tons of greenhouse gas emissions in terms of short tons of CO₂ equivalent (CO₂e), using a Global Warming Potential (GWP) of 1 for CO₂, 21 for CH₄, and 310 for N₂O, (Erbes, 2013). Total CH₄ contributions would be between 45 tons per year (GWP 3,600 tpy) and 415 tons per year (GWP 8,715 tpy). Total N₂O contributions would be between 1 ton per year (GWP 310 tpy) and 15 tons per year (GWP 4,650 tpy). Total CO₂e contributions would be between 16,275 tons per year (GWP 16,275 tpy) and 78,900 tons per year (GWP 78,900 tpy). This compares to the total worldwide contribution of CH₄ which is 730,832,399 tons per year (GWP 15,347,480,381 tpy) or 0.00015 percent of the world wide total CH₄ yearly emissions.

Production Indirect Greenhouse Gas Emissions

Indirect GHG emissions are estimated on the basis of 25 wells (see RFD scenario, Section 2.5), and presented as low and high production scenarios estimated from current and historic oil production in the District. An average emissions scenario was not provided due to the high uncertainty involved in drilling in Nevada; of 270 wells drilled since 1986, only 50 have produced commercial quantities of oil. It is impossible to know which of these scenarios (if any) will actually occur, so emissions numbers are

presented to estimate the range of possible indirect emissions that could occur as a result of the lease sale. Indirect GHG emissions are calculated only for carbon dioxide based on combustion of the product.

Table 4. Indirect greenhouse gas emissions.

Indirect GHG Emissions (tpy)	Oil ³
Low ¹	0
High ²	215,000

1. Assumes no development on a lease parcel

2. Highest producing wells drilled in the last 50 years in Nevada, from Nevada Bureau of Mines and Geology.

3. Oil well GHG indirect emission factor: 0.43 MT CO₂ per barrel

As it is not possible to assign a “significance” value or impact to these numbers, the emissions estimates themselves are presented as a proxy for impact. This is consistent with final CEQ guidance (CEQ 2016).

Uncertainties of GHG Calculations

Although this EA presents a quantified estimate of potential GHG emissions associated with reasonably foreseeable oil and gas development, there is significant uncertainty in GHG emission estimates due to uncertainties with regard to eventual production volumes and variability in flaring, construction, and transportation.

End Uses

The estimates above provide a complete GHG lifecycle of a well from site inspection to possible indirect emissions through combustion. A rough estimate was possible using publicly available information and estimating future production under the reasonably foreseeable development scenario (Section 2.5). With respect to the rough estimates of indirect CO₂ emissions, it should be noted that it is difficult to discern with certainty what end uses for the fuels extracted from a particular leasehold might be reasonably foreseeable. Some end uses of fossil fuels extracted from Federal leases include combustion of transportation fuels, fuel oils for heating, and electricity generation; production of asphalt and road oil; and the feedstocks used to make chemicals, plastics, and synthetic materials. At this time, there is some uncertainty with regard to the actual development that may occur.

It is important to note that the BLM does not exercise control over the specific end use of the oil and gas produced from any individual Federal lease. The BLM has no authority to direct or regulate the end use of the produced oil and/or gas. As a result, the BLM can only provide an estimate of potential GHG emissions using national approximations of where or how the end use may occur because oil, condensate, and natural gas could be used in any of the ways described above.

Other Climate Change Factors

Also, nitrous oxide and VOCs are indirect air pollutants that contribute to ozone production and aid in prolonging the life of methane in the atmosphere. With respect to climate change, climate plays a significant role in the production of ozone. Sunlight and high temperatures are a major catalyst in reactions between VOCs and NO_x in the production of ozone. With an increase in overall temperature, we can expect to have more hot days and less precipitation that will lead to a higher production of ozone. Activities such as fossil fuel combustion, deforestation, and other changes in land use are resulting in the

accumulation of trace GHGs such as carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), water vapor, and several industrial gases in our atmosphere. An increase in GHG emissions is said to result in an increase in the earth's average surface temperature, primarily by trapping and decreasing the amount of heat energy radiated by the earth back into space. The phenomenon is commonly referred to as global warming. Global warming is expected, in turn, to affect weather patterns, average sea level, ocean acidification, chemical reaction rates, precipitation rates, etc., which is commonly referred to as climate change. The Intergovernmental Panel on Climate Change has predicted that the average global temperature rise between 1990 and 2100 could be as great as 5.8°C (10.4°F), which could have massive deleterious effects on the natural and human environments. Although GHG levels have varied for millennia (along with corresponding variations in climatic conditions), industrialization and burning of fossil carbon sources have caused GHG concentrations to increase measurably, from approximately 280 ppm in 1750 to 396 ppm in 2012 (as of June). The rate of change has also been increasing as more industrialization and population growth is occurring around the globe. This fact is demonstrated by data from the Mauna Loa CO₂ monitor in Hawaii that documents atmospheric concentrations of CO₂ going back to 1960, at which point the average annual CO₂ concentration was recorded at approximately 317 ppm. The record shows that approximately 70% of the increases in atmospheric CO₂ concentration or build up, since pre-industrial times has occurred within the last 50 years.

Climate change information is difficult to quantify. However, the following bullet points summarize potential changes identified by the EPA that are expected to occur at the regional scale, where the Proposed Action and its alternatives are to take place. The EPA identifies this area as part of the South West region (<http://www.epa.gov/Region8/climatechange/pdf/ClimateChange101FINAL.pdf>). The region described by the EPA is expected to experience warmer temperatures with less snowfall.

- Temperatures are expected to increase more in winter than in summer, more at night than in the day, and more in the mountains than at lower elevations.
- Earlier snowmelt means that peak stream flow would be earlier, weeks before the peak needs of ranchers, farmers, recreationalist, and others. In late summer, rivers, lakes, and reservoirs would be drier.
- More frequent, more severe, and possibly longer-lasting droughts are expected to occur.
- Crop and livestock production patters could shift northward; less soil moisture due to increased evaporation may increase irrigation needs. Drier conditions would reduce the range and health of ponderosa and lodgepole pine forests, and increase the susceptibility to fire. Grasslands and rangelands could expand into previously forested areas
- Ecosystems would be stressed and wildlife such as the mountain lion, black bear, and bald eagle could be further stressed.

Other impacts could include:

- Increased particulate matter in the air as drier, less vegetated soils experience wind erosion.
- Shifts in vegetative communities which could threaten plant and wildlife species.
- Changes in the timing and quantity of snowmelt which could affect both aquatic species and agricultural needs. Projected and documented broad-scale changes within ecosystems of the U.S. are summarized in the Climate Change Scientific Investigations Report (USGS 2010). Some key aspects include:

- Large-scale shifts have already occurred in the ranges of species and the timing of the seasons and animal migrations. These shifts are likely to continue.
- Climate changes include warming temperatures throughout the year and the arrival of spring an average of 10 days to 2 weeks earlier through much of the U.S. compared to 20 years ago. Multiple bird species now migrate north earlier in the year.
- Fires, insect epidemics, disease pathogens, and invasive weed species have increased and these trends are likely to continue. Changes in timing of precipitation and earlier runoff increase fire risks.
- Insect epidemics and the amount of damage that they may inflict have also been on the rise. The combination of higher temperatures and dry conditions have increases insect populations such as pine beetles, which have killed trees on millions of acres in western U.S. and Canada.
- Warmer winters allow beetles to survive the cold season, which would normally limit populations; while concurrently, drought weakens trees, making them more susceptible to mortality due to insect attack.

It is currently not feasible to predict with certainty the net impacts from the Proposed Action on climate, as leasing is an administrative action and has no direct effects. The inconsistency in results of scientific models used to predict climate change at the global scale, coupled with the lack of scientific models designed to predict climate change on regional or local scales, limits the ability to quantify potential future impacts of decisions made at this level. When further information on the impacts to climate change is known, such information would be incorporated into the BLM planning and NEPA documents as appropriate.

Partial Deferral Alternative and Additional Resource Protection Alternative

From the perspective of air quality, these alternatives would simply shift the location of any future exploration, development or production activity within the Battle Mountain District; and/or would add new stipulations that are not related to air quality. Because air quality, climate change and greenhouse gas effects occur on a regional to global scale, effects would be the same as for the Proposed Action.

No Leasing Alternative

Under this alternative, any future exploration, development or production activity would occur on other leased parcels in the Battle Mountain District. Except for the specific locations of any ground disturbing activities and resulting dust and emissions, the effects would be the same as for the Proposed Action.

3.2.2 Soils

Affected Environment

Differences in climate, relief, aspect, slope, landform, elevation and parent material among other factors contribute to the formation of different soil types. High variability of these factors within the project area creates a wide variety of represented soil types. Soils within the project area range from those typically found in valley floors, deep and poorly drained due to high clay content with a highly alkali pH, to those common in the higher mountain elevations which tend to be shallow gravely soils with near neutral pH.

Existing soils surveys of the project area are used for evaluating land-use potential, potential plant communities and developing reclamation and rehabilitation plans. Three major soil orders dominate project area: Aridisols, Entisols and Mollisols. A brief description of each soil order, including the three dominant in the project area, is provided below.

Aridisols are soils that are too dry for the growth of mesophytic plants. The lack of moisture greatly restricts the intensity of weathering processes and limits most soil development processes affecting the uppermost layers of the soils. These soils often accumulate gypsum, salt, calcium carbonate, and other materials that are easily leached from soils in more humid environments. They have properties typical of soils in arid regions and are low in organic matter. Aridisols are mainly found in valley bottoms, but may occur at higher elevations. They do not have water continuously available during the growing season and typically have a water stress period of about 3 months. Aridisols tend to have a finer texture than the other two orders.

Entisols are found on recent landscapes, such as alluvium and disturbed sites. Soil texture tends to be more gravelly and well drained. Entisols are mineral soils that are very young and have not yet developed appreciable accumulations of soluble salts and lime. Soil horizon development is typically minimal. They occur in both the valley bottoms and higher elevations. In the mountains these tend to make up the steeper, more erodible soils, whereas at lower elevation they tend to be found in areas of deposition such as alluvial fans and floodplains. Though these sites are typically xeric, they are not as dry as the Aridisols.

Mollisols are found on dark-colored fertile surface horizons that have been formed under semiarid to sub-humid climate. Moisture availability is typically the highest in this soil type as compared to those previously mentioned. These soils are rich in organic matter and are very fertile due to the available moisture. In the project area, these soils mainly form on mountain slopes, producing healthy grass and forb communities. These soils are older and generally occur on more stable alluvial fans and terraces which have a higher degree of stability due to the increased vegetative structure.

Microbiotic crusts are a complex mosaic of cyanobacteria, green algae, lichens, mosses, microfungi, and other bacteria found throughout the Great Basin and Project Area. Cyanobacterial and microfungi filaments weave through the top few millimeters of soil, gluing loose particles together and forming a matrix that stabilizes and protects soil surfaces from erosive forces. Microbiotic crusts retain soil moisture, discourage invasion by annual species, reduce wind and water erosion, fix atmospheric nitrogen and contribute to soil organic matter. These crusts can be impacted by surface disturbing activities. With greater the disturbance, there are greater impacts and more time is required for recovery of these sites. Microbiotic crusts can also be indirectly impacted from increased erosion, whether eroded away or covered by soil from wind or water events. Slight covering by soil does not affect microbiotic crusts (Technical Reference 1730-2, 2001).

Environmental Consequences

Proposed Action

Although there would be no direct impacts to soils due to oil and gas leasing because no authorization for surface disturbance would be granted, there could be indirect impacts to soils from future projects on any leased parcels, including such activities as seismic studies, exploratory drilling, developing a well for

production (with or without using HF), and reclamation activities. It is reasonably foreseeable that oil and gas exploration and development would occur over the next 10 years within the Assessment Area and 65-100 acres will be disturbed by activities associated with oil and gas exploration and production including exploration wells, production infrastructures, road construction, and gravel pit expansion. These actions would remove vegetation, potentially increasing wind and water erosion; cause soil compaction; and disturb microbiotic crusts. Also, removal and crushing of vegetation would occur through exploration and development activities. Considering the amount of disturbance anticipated in the RDF scenario (65-100 acres), the impacts to soils are expected to be comparatively minor when compared to the areas offered for lease (approximately 195,732 acres) and temporary in nature because the majority of the disturbance (roads and pads) would be reclaimed.

However, nine parcels located on the Diamond Mountain Range are in locations with slopes in excess of 45%, and eight parcels have slopes in excess of 60%. These high elevation mountain locations would be more susceptible to erosion, and potential impacts could be concentrated in these locations. Two additional parcels (NV-17-67 and NV-17-90) also have slopes of 45% or greater.

Impacts to soil from these 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 Conditions of Approval (COAs) for each proposed activity.

Partial Deferral Alternative

Under this alternative, approximately 104,668 acres are proposed for deferral due to sensitive wetlands, seeps and/or springs, floodplains, playas, steep slopes, or historical features. If deferred these approximately 104,668 acres would not be subject to the potential effects described for the Proposed Action, involving temporary disturbance to 65-100 acres of soils. Deferred parcels would include the parcels identified above as having steep slopes, which would be especially vulnerable to erosion; and riparian-wetland areas, with soils having higher susceptibility to disturbance and alteration. Under this alternative these soils would receive greater protection from impacts until protective stipulations are developed for an updated RMP. The remaining 91,064 acres that would be offered for lease sale under this alternative would be subject to the same potential effects as described for the Proposed Action.

Additional Resource Protection Alternative

Under this alternative, instead of deferring parcels, additional stipulations would be applied in order to protect resources including crucial wildlife habitats, and prevent degradation from erosion.

Soils would receive more protection than under the Proposed Action, because stipulations would protect steep slopes and sensitive riparian/wetland area soils; and similar protection as under the Partial Deferral Alternative, because more acreage would be addressed and the degree of protection, although less, would be adequate.

Parcels with steep slopes and with riparian-wetland areas would have stipulations applied that would protect these vulnerable soils. The stipulation for steep slopes would provide CSU for slopes greater than 30 percent, whereas only certain slopes greater than 40 percent would be protected under the NSO stipulation proposed under the Partial Deferral Alternative. Parcels totaling approximately 72,374 acres

would be covered by the Slopes >30% stipulation. The CSU stipulation would provide protection similar to that of NSO, i.e. requiring engineering and reclamation that would avoid impacts.

Concurrent reclamation would be completed for all producing well locations; this feature would provide improved soil stability onsite and control of any soil erosion that may take place. Also, native vegetation would be restored during concurrent reclamation, partially restoring the site's vegetative productivity. As for final reclamation, sufficient topsoil would be maintained, allowing the site to be restored to its original landform. Native seed would be utilized during final reclamation, restoring the site's full vegetative productivity.

Parcels totaling approximately 58,000 acres would be covered by the Water Resources stipulation. There would be more acreage protected from impacts to these soils with high susceptibility to disturbance and alteration than under the Partial Deferral Alternative. The degree of protection would be adequate for soils, because vulnerable soils would not be expected to extend beyond the area within which impacts would not be allowed (within 500 feet of wetland/riparian, floodplain or playa, or within 100 feet of ephemeral streams).

No Leasing Alternative

Under this alternative, no parcels would be offered for leasing in 2017 and the potential effects described above would occur on other leased parcels in the Battle Mountain District.

3.2.3 Paleontological Resources

Affected Environment

Paleontological resources are defined in the federal Paleontological Resources Preservation Act (PRPA [also commonly known as the Omnibus Act]) as the “fossilized remains, traces, or imprints of organisms, preserved in or on the earth's crust, that are of paleontological interest and that provide information about the history of life on earth” (16 United States Code [U.S.C.] 470aaa[1][c]).

Parcels proposed for the 2017 lease sale are located primarily in the Diamond, Garden, and Big Smoky Valleys (Figures 2 and 4). Other parcels are located in the Diamond, Sulphur Springs, and Fish Creek Ranges (Figures 2 and 3). One smaller parcel is positioned in Railroad Valley (Figure 5). Formations or rock units which are known to yield vertebrate or significant invertebrate, plant, or trace fossils, have a high potential for containing significant paleontological resources. Parcels within Big Smoky Valley have the potential to contain rock units with vertebrate or other significant fossils. The parcel in Railroad Valley has low to moderate potential for significant paleontological resources.

Environmental Consequences

Proposed Action

Conservatively, based on historic information and anticipated activity, over the next ten years, approximately 65-100 acres of surface disturbance associated with potential oil and gas exploration and production activities could be expected to occur in the Battle Mountain District. Paleontological resources may be subject to impacts from potential oil and gas exploration and production activities; therefore,

identification and evaluation of these resources would be required on a case-by-case basis prior to project implementation or ground disturbing activities.

BLM Instruction Memorandum (IM) No. 2009-011 provides guidelines for assessing potential impacts to paleontological resources in order to determine mitigation steps for federal actions on public lands under FLPMA (Public Law [PL] 94–579, codified at 43 U.S.C. 1701–1782 and 18 U.S.C. 641) and NEPA. This IM also provides procedures for field survey and monitoring to avoid adversely affecting significant paleontological resources.

Lease Notices NV-B-08-B-LN and NV-B-08-C-LN would be attached to all potentially affected leases within Battle Mountain District to help minimize any potential effects on paleontological resources located within the proposed parcels. The first Lease Notice informs the lessee(s) that their lease(s) may contain a low to moderate potential for vertebrate fossils and if previously undiscovered paleontological resources are discovered in the performance of any surface disturbing activities, the item(s) or condition(s) would be left intact and immediately brought to the attention of the authorized officer of the BLM. Operations within 250 feet of such discovery would not be resumed until written authorization to proceed is issued by the Authorized Officer. The lessee would 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. Lease Notice NV-B-08-C-LN informs the operator that the area has high and very high potential for paleontological resources. This land is underlain by geologic units that have been documented to contain a high occurrence of fossils, which may consist of scientifically significant paleontological resources protected by PL 111-11, Paleontological Resources Preservation Act. A field survey by a qualified paleontologist, and at the lessee's expense, will be required prior to surface-disturbing activities. If significant paleontological resources of scientific or educational importance are discovered, they will require avoidance or data recovery prior to their disturbance. On-site monitoring may be necessary during construction activities.

Based on the above requirements, it is unlikely that indirect effects to paleontological resources from leasing these 106 parcels would be substantial.

Partial Deferral Alternative

Under this alternative, approximately 104,668 acres are proposed for deferral due to sensitive wetlands, seeps and/or springs, floodplains, playas, steep slopes, or historical features. If deferred these approximately 104,668 acres would not be subject to the potential effects described for the Proposed Action, involving disturbance to 65-100 acres that may contain paleontological resources. Parcels proposed for deferral for reasons of wetlands and/or slopes greater than 40% include two that have high or very high potential for fossil occurrence, so these deferrals would provide additional protection to paleontological resources in these high-probability areas. The remaining 91,064 acres that would be offered for lease sale under this alternative would be subject to the same potential overall effects to paleontological resources—and the required avoidance and/or data recovery measures—as those identified for the Proposed Action.

Additional Resource Protection Alternative

Under this alternative, all 41 parcels with slopes greater than 30% would have a new stipulation applied with measures to prevent erosion (see Appendix C.2). This would provide more protection to paleontological resources than the Proposed Action. All eight parcels with high or very high potential for fossil occurrence are on slopes greater than 30 percent and would be covered by the new stipulation.

No Leasing Alternative

Under this alternative, no parcels would be offered for leasing in 2017 and the impacts described above would occur on other leased parcels in the Battle Mountain District.

3.2.4 Water (Surface and Ground) Quality and Quantity

Affected Environment

Water in the lease area is owned by the people of Nevada; however, the right to use surface and groundwater and management of water appropriations are administered by the Nevada Division of Water Resources (NDWR). The water quality standards of Nevada support other Federal laws such as the Clean Water Act of 1977, the Water Resources Planning Act of 1962, the Pollution Prevention Act of 1990 and the Safe Drinking Water Act of 1977 and are administered by the Nevada Division of Water Quality (NDWQ). The lease area is part of the Basin and Range Physiographic Province, a semiarid and arid desert environment with most precipitation originating as snow or occasional Monsoon Rainfall. Annual precipitation is highly variable. The average annual precipitation in Tonopah is 4.95 inches and March and April are the wettest months (WRCC 2015b). The average annual precipitation in Battle Mountain is 6.3 inches and April and May are the wettest months (WRCC 2015a).

Water is a fundamental component of ecosystem health, especially in arid regions. Springs, seeps, wetlands and perennial streams form literal oases that support all life and encourage biodiversity. Wetlands, seeps, and springs play an important role in wildlife habitat and in the food chain for many wildlife taxa, including non-game and game-species. In the Big Smoky Valley Complex and Diamond Valley Complex, there are resident and migrating species that utilize these wetlands. They may use these areas for feeding, breeding, nesting, burrowing, as a migration corridor, and/or as a layover while they are migrating to other areas. There are also aquatic wildlife species, including endemic fish and invertebrates, which rely upon wetlands, seeps, and springs (also see Wildlife Resources, Section 3.2.8).

Watershed Boundary

The proposed lease parcels are located in Hydrographic Region 16, Great Basin. The lease parcels are located within the following sub-watersheds:

- Northern Big Smoky Valley Watershed, HUC# 16060004
- Diamond-Monitor Valleys Watershed, HUC# 16060005
- Little Smoky-Newark Valleys Watershed, HUC# 16060006
- Hot Creek-Railroad Valleys Watershed, HUC# 16060012

Groundwater

Runoff from upland areas of the Assessment Area will commonly infiltrate into pediment deposits as they transition into the low basins. Groundwater is either directed toward the playa and is lost to the

atmosphere as evapotranspiration, or seeps into deeper aquifers that compose larger regional flow systems. Perennial base flow from springs is largely driven by snowmelt runoff recharge. Depth to groundwater is highly variable throughout the Assessment Area, ranging from a few feet to hundreds of feet depending on location.

Nevada's groundwater quality standards are based on the assumption that groundwater should be maintained suitable for use as a drinking water source, unless the natural water quality prevents this. The State adopts the Federal primary and secondary drinking water standards (maximum contaminant limits) for groundwater resources. The chemical character and quality of groundwater varies in the lease area and depends largely on the mineral content of the rock, residence time, evapotranspiration and temperature.

Riparian/Wetland Zones

The health of riparian and wetland ecosystems is a function of water quality and supply. Riparian and wetland areas are the most productive and important ecosystems on the Battle Mountain District. While they represent less than one percent of the area, they contain the majority of the biodiversity and perform vital ecologic functions. Research has shown that riparian and wetland habitat characteristically has a greater diversity of plant and animal species than adjoining areas. According to the National Hydrography Dataset and the National Wetlands Inventory, the parcels proposed for lease contain approximately at least 34 springs and seeps, 3.9 miles of perennial streams and 127.9 miles of ephemeral and intermittent streams. These streams may have associated riparian and wetland habitat. National Hydrography Dataset (USGS) features in the Assessment Area include 286 acres of swamps and marsh, 300 acres of lakes and ponds, and 13,044 acres of playa. National Wetlands Inventory features in the Assessment Area include 326 acres of freshwater emergent wetlands, 348 acres of freshwater forested and shrub wetlands and 9,118 acres of lakes. Unsurveyed features most likely exist, and would be determined at the project proposal and review stage.

The Nevada Natural Heritage Program (NNHP) has identified and mapped sensitive lakes and wetland-type habitats. Parcels in Big Smoky Valley are categorized as major wetlands in portions of parcels 10, 12, 13, 19, 20 and 21; and in Diamond Valley, parcel 52. The NNHP has additionally identified portions of parcels (82, 84, 85, 86, 87, 88, 74, 77, 70, 80, 81, 99 and 101) and a few parcels in entirety (73, 75 and 89) as major playas in the Diamond Valley area. The NNHP serves the citizens of Nevada as an "early warning system" providing high-quality information early in planning processes to help minimize costly resource conflicts, and to help prevent species from becoming threatened or endangered.

Recent BLM fieldwork has led to the discovery of unique hydrologic features in the Big Smoky Valley, henceforth referred to as spring mounds. They are believed to have been first identified by Meinzer (1917), and their formation may date back to the end of the Pleistocene, when a series of pluvial lakes transitioned into alkali flats, allowing these spring mounds to form. The spring mounds are an extremely unusual and rare hydrologic feature. The mounds are circular in shape, and while they vary in size, they tend to be five to ten feet taller than the surrounding land surface and 100 to 200 feet in diameter. The surface of the entire mound is wet, with water seeping out to an average depth of one-half to one inch. The water smells of sulfur and bacteria characteristic of acidic environments can be seen at the surface. Grasses grow at the surface, and a variety of insects live within the habitat provided. The most distinctive feature of the spring mounds, however, is that the surface of the mound appears to be composed of

bacterial mats. It is not clear if the bacterial mats and vegetation grow on a common soil horizon, or if they vegetation is growing in the bacterial mat itself. It is also not clear if the mat is singular, or perhaps the last in a successive series of bacterial mats. The spring mounds will oscillate up and down when impacted, which implies the upper extent of the mount may be composed of multiple layers of bacterial mat interspersed with spring water.

Floodplains

The Federal Emergency Management Agency designates “Zone A” flood hazard areas. Zone A flood hazard areas are subject to inundation by the 1-percent-annual-chance flood event, and they have been delineated in some of the offered leasing area. There are a total of 17,551 acres of the offered lease parcels identified within Zone A flood hazard areas that would be subject to federal regulation and mitigation. Additional site-specific analysis to identify potential flood plain complications would be required prior to drilling in parcels that meet this designation.

Environmental Consequences

Proposed Action

The sale of parcels and issuance of oil and gas leases is strictly an administrative action. The act of offering, selling, and issuing federal oil and gas leases does not produce impacts to water quality and surface water. On-the-ground impacts would not occur until a lessee applies for and receives approval to drill on the lease. The BLM cannot determine at the leasing stage whether or not a proposed parcel will actually be sold, or if it is sold and issued, whether or not the lease would be explored or developed. Consequently, the BLM cannot determine exactly where on a lease a well or wells may be drilled or what technology may be used to drill and produce wells, so the impacts listed below are derived from historical information and what might be proposed in the near future. Impacts of any future proposed exploration or development would be analyzed under additional site-specific, project-specific environmental analysis.

Subsequent development of a lease may result in long-and short term alterations to the hydrologic regime depending upon the location and intensity of development. Clearing, grading, and soil stockpiling activities associated with exploration and development actions could alter short-term overland flow and natural groundwater recharge patterns, but in most cases, these potential impacts can be mitigated by better location siting and engineering controls. The BLM may move a proposed well site up to 200 meters at its discretion to mitigate impacts, and the requirements of the Clean Water Act may necessitate relocating the well further. However, several of the proposed lease parcels – particularly in Big Smoky Valley and northern Diamond Valley – largely or entirely overlay a combination of water bodies, wetlands, perennial or ephemeral streams, floodplains, and/or ephemerally-flooded playas, to the extent that it would be difficult or impossible to avoid impacts to these hydrological features and their associated plant communities and wildlife habitats. Leasing these parcels would risk violation of Executive Orders 11988 and 11990 and/or the Clean Water Act.

Groundwater: All activities would be subject to BMPs, State and Federal Regulations and COAs. Potential impacts to groundwater by the development of a lease may include degradation of water quality and drawdown of existing water levels. Water quality issues may arise from either underground or surface

contamination. The primary cause of underground degradation would be from improperly functioning well casings. Surface activities can degrade groundwater by infiltration of contaminants, particularly from sumps and spills. Areas with shallow groundwater levels would be at greater risk and may be subject to COAs. All required state and federal regulations would apply to any future development, and site-specific COAs and mitigation would be an integral part of the approval of any APD.

Hydraulic fracturing (HF) is one method of well stimulation used in oil and gas production. HF is designed to change the producing formations' physical properties by increasing the flow of water, gas, and/or oil around the wellbore. This change in physical properties may open up new fractures or enhance existing fractures that could result in freshwater aquifers being contaminated by natural gas, condensate and/or chemicals used in drilling, completion and HF. Historically, impacts to groundwater resources are due to improper well construction including insufficient or poorly installed surface and/or borehole seals (cementing), unsuitable construction materials and/or inadequate construction practices, introduction of surface contaminants into groundwater through surface spills, and/or loss of drilling, completion and hydraulic fluids into groundwater. Types of chemical additives used in completion activities may include acids, hydrocarbons, gelling or thickening agents, lubricants, and other additives that are specific for the well being treated.

The potential for negative impacts to groundwater caused by HF are continually being investigated by the Environmental Protection Agency. All HF operations would be subject to the regulations required by the State of Nevada, Adopted Regulation of the Commission on Mineral Resources R011-14, which hold the operator to a higher standard than the BLM's proposed HF rules. Onshore Oil and Gas Order #1 specifies that lessees and operators must comply with applicable state laws on federal leases (48 FR 56226, Dec. 20, 1983).

The Nevada HF rules require the use of multiple steel casing strings (Surface, Intermediate, and Production) with proper cementing jobs (with required testing for efficacy) to isolate any usable groundwater or other resources from the well bore in any application of HF. The Nevada HF rules also require the disclosure of all chemicals used in an HF treatment, and continued monitoring of the well bore for any signs of leaking during the treatment. Proper casing and cementing along with monitoring would prevent any contamination of groundwater from any HF or other well stimulation treatment.

Standard BMPs and COAs include the use of lined pits with secondary containment and monitoring features for any flow-back or produced fluids which are designed to prevent any infiltration or other contamination of groundwater or surface water resources.

For more information on risks to groundwater from HF, refer to Appendix E.

Surface Waters: Runoff associated with storm events could increase sediment and salt loads in surface waters down-gradient of the disturbed areas. Sediment may be deposited and stored in minor drainages where it could be readily moved downstream (within closed basins) during heavy storms. Sediment from future development activity may be carried into contained basins and sloughs. This would be especially true in areas with high slopes in excess of 45% such as the nine parcels on the Diamond Mountain range, and parcel NV-17-067 and NV-17-090. In some cases, the parcels in the high elevations of the Diamond Range exceed 60% slopes. These mountainous areas would be more susceptible to erosion and

consequent impacts to the perennial and ephemeral creeks, springs, and meadows. All activities would be subject to BMPs, state and federal regulations and COAs. Potential impacts of lease development on surface waters may include changes to water quantity and quality. If future surface disturbing activities are proposed near surface waters or wetlands and riparian zones, additional mitigation would be required. All operations would be required to comply with all state and federal regulations.

Riparian and Wetland Areas: The consequences of oil and gas exploration or development in wetlands and riparian areas are potentially severe, as these environments are extremely sensitive to any perturbation.

The hydrogeology that results in spring discharge is often unique and complex. For the numerous springs, seeps, and spring-fed wetlands within the deferred parcels, there would be a slight risk that drilling would lead to subsurface modification due to the possibility of interfering with groundwater flow in a fault. As any future drilling takes place, geophysical studies may be required which provide a subsurface view of both the strata and the permeability of the strata, in which case the likelihood of penetrating a fault with groundwater flow would be minimized.

However, under the Proposed Action there could be other potential future impacts to the many springs, seeps, spring-fed wetlands and riparian areas within the proposed lease parcels under this alternative. The available mitigation measures and BMPs might not be adequate to fully protect these water resources, and the current Shoshone-Eureka and Tonopah RMPs do not include adequate protective stipulations. The predicted surface disturbance, although minor in area, would have a disproportionate effect in these environments. Road building could redirect water flows; any loss or diversion of water or instream flow can affect wetland and riparian health and impact these ecosystems. Contaminants from any accidental spillage are easily brought into solution and spread throughout the system. Human activity can affect turbidity and dissolved oxygen content, which in turn harm microbial life.

While there remains much to learn about the spring mounds, they clearly possess a geochemistry, geomorphology, and biologic diversity that are utterly unique within the surrounding environment. Based on the unknown value of these features, preservation for the purpose of future study to facilitate proper management is essential. Under the Proposed Action these resources could be damaged beyond repair through indirect impacts of any future oil and gas exploration or development.

Partial Deferral Alternative

Under this alternative, approximately 104,668 acres are proposed for deferral due to sensitive wetlands, seeps and/or springs, floodplains, playas, steep slopes, or historical features. If deferred these approximately 104,668 acres would not be subject to the potential effects described for the Proposed Action.

All parcels or parts of parcels that are largely or entirely occupied by wetlands, riparian zones, seeps/springs, floodplains and/or playas are proposed for deferral. The majority of the proposed deferrals are due to these features. Generally these hydrologic features co-occur and overlay one another in the Assessment Area, so that most of the proposed deferral parcels include several or all of these features (see Appendix C). One proposed 1139-acres deferral is specifically to protect the spring mounds. Under this alternative, the likelihood of impacts to all of these hydrologic features would be considerably reduced. In

deferring these parcels BLM proposes to develop stipulations to protect these features in an updated RMP: No Surface Occupancy for wetlands, floodplains and playas, and Controlled Surface Use for a riparian buffer (Appendix C).

On the remaining 91,064 acres that would be offered for lease sale under this alternative, the potential effects described for the Proposed Action would be unlikely, as these parcels either include no wetland/riparian, seep/spring, floodplain or playa areas, or have ample acreage outside of such areas to allow developing the parcel without impacting hydrologic features, through application of the available BMPs and mitigations at the time of any future proposal for exploration or development.

Additional Resource Protection Alternative

Protection of water resources under this alternative would be similar to that described for the Partial Deferral Alternative, but with more area protected. Parcels totaling approximately 58,000 acres would be covered by the Water Resources stipulation, and another 72,000 acres would be covered by the Slopes > 30% stipulation. The parcels would be available for lease sale with a stipulation effective immediately, rather than deferred from lease sale pending future stipulations; but the stipulation is sufficient to protect water resources.

All of the proposed future stipulations that would protect wetlands, riparian zones, seeps/springs, floodplains and/or playas would be combined into one Water Resources stipulation that provides a similar degree of protection. This Water Resources stipulation also addresses ephemeral channels. The stipulations are Controlled Surface Use (CSU) rather than No Surface Occupancy (NSO); however, the controls are designed to protect water resources and prevent erosion, with appropriate avoidance buffers, engineering controls, and mitigation, for resources wherever they may occur within a parcel. Application of the stipulation would generally protect water resources from all impacts.

Under this alternative all parcels on which water resources were identified would have the stipulation applied to the $\frac{1}{4}$ $\frac{1}{4}$ sections that encompass the target resource. This would ensure that even small areas of surface water resources would be protected, including some that lie outside of the acreage covered by the Partial Deferral Alternative.

Also, several parcels that were not addressed by the Partial Deferral Alternative would be protected by these stipulations, including the stream channel on parcel 37, which includes ephemeral drainages downstream from habitat occupied by an ESA-listed Threatened fish species.

The proposed combination of avoidance buffers, engineering controls and mitigation requirements along with additional project and site-specific analysis and Conditions of Approval at the exploration and development stage will meet the requirements of the Clean Water Act and provide sufficient protection for water resources on the parcels.

No Leasing Alternative

Under this alternative, no parcels would be offered for leasing in 2017 and the potential effects described above would occur on other leased parcels in the Battle Mountain District.

3.2.5 Vegetation

Affected Environment

Vegetation within the proposed lease area provides forage and cover for wildlife, livestock, wild horses and burros within the project area. It also provides ground cover and root mass to stabilize soils and aids in infiltration of water into the ground. The type of vegetation that grows in a particular area depends largely on soil types and average precipitation. The Natural Resource Conservation Service completed soil surveys and has developed ecological site descriptions from the information collected. Each ecological site description provides detailed information regarding vegetative communities and precipitation zones and is used for evaluating land-use potential, potential plant communities and developing reclamation and rehabilitation plans. The following vegetative communities are those identified within the lease parcel area and are discussed in detail below. Notably, several plant species in the Battle Mountain District have been identified as special status species (Appendix D). These occur in several of the vegetation communities described here.

Sodic Flats / Flood Plains: This community occurs on floodplains, closed-basin bottomlands adjacent to playas, and alluvial flats. Greasewood is located on slopes that range from 0-2% with an elevation of 4500-5,000 feet and occurs in precipitation zones of 3-5 and 5-8 inches. Vegetation in this type is normally restricted to mounded areas that are surrounded by playa-like depressions or nearly level, usually barren, interspaces. The soil moisture regime is aquic. This plant community is characterized by black greasewood (*Sarcobatus vermiculatus*), Basin wildrye (*Leymus cinereus*), inland saltgrass (*Distichlis spicata*) and alkali sacaton (*Sporolus airoides*). Saltgrass may extend into the interspace in some areas. Potential vegetative composition is typically 25% grasses, 5% forbs and 70% shrubs.

Salt Desert Shrub: This vegetative community occurs on alluvial terraces, fans and foothills on all aspects. Salt desert shrubs are located on slopes of 0-30%, with 0-8% slopes the most typical. Salt Desert Shrub occurs at elevations between 4500 and 6000 feet and within precipitation zones of 3-5 and 5-8 inches. The plant community is characterized by shadscale (*Atriplex confertifolia*), bud sagebrush (*Artemisia spinescens*) and some winterfat (*Krascheninnikovia lanata*). Bud sagebrush and winterfat are palatable salt desert shrub species. Bottlebrush squirreltail (*Elymus elymoides*) and Indian ricegrass (*Achnatherum hymenoides*) are key grass species associated with this vegetative community. Alkali meadows are included in this plant community and consist of inland saltgrass and basin wildrye. Potential vegetative composition is typically 10% grasses, 5% forbs and 85% shrubs.

Big Sagebrush: This is the most extensive community within the Assessment Area. It occurs on terraces, alluvial fans and low rolling hills on all exposures. Wyoming sagebrush (*Artemisia tridentata ssp. Wyomingensis*) and basin big sagebrush (*Artemisia tridentata ssp. tridentata*) occur on slopes of 2-50 percent with elevations ranging from 4500 to 6000 feet and within the 8-12 inch precipitation zone. This plant community is characterized by Wyoming and Basin big sagebrush, Thurber's needlegrass (*Achnatherum thurberianum*), Indian ricegrass, Basin wildrye, bottlebrush squirreltail and Sandberg's bluegrass (*Poa secunda*). Arrowleaf balsamroot (*Balsamorhiza sagittata*) and Tapertip hawkbeard (*Crepis acuminata*) are important forb species associated with this vegetation type. Potential vegetative composition is typically 50% grasses, 15% forbs and 35% shrubs.

Black Sagebrush: This vegetative community occurs on low arid foothills, mountain side slopes and plateaus. Black sagebrush (*Artemisia nova*) occurs on slopes of 4-50% with elevations ranging from 5000 to 7000 feet and is associated with the 4-8 inch precipitation zone. Soils are often shallow over a

calcareous pan, which limits effective water holding capacity and seeding success. Vegetation that characterizes this community consists of black sagebrush, bottlebrush squirreltail and Sandberg's bluegrass. Bluebunch wheatgrass (*Pseudoroegneria spicata*) is characteristic for communities that occur in the higher elevations. Potential vegetative composition is typically 50% grasses, 15% forbs and 35% shrubs.

Low Sagebrush: This vegetative community occurs on mountain side slopes and plateaus. Low sagebrush occurs on slopes of 4-75% with elevations ranging from 5000 to 9000 feet and is associated with the 8-12 inch precipitation zone. Soils are often shallow over a calcareous pan, which limits effective water holding capacity and seeding success. This vegetative community is characterized by low sagebrush (*Artemisia arbuscula*), bottlebrush squirreltail, Sandberg's bluegrass and bluebunch wheatgrass. Potential vegetative composition is typically 50% grasses, 15% forbs and 35% shrubs.

Mountain Brush: This community occurs on upland terraces and inset mountain valleys on all slope aspects. Mountain brush occurs on slopes of 4-50% with elevations ranging from 6000 to 9000 feet. These communities generally occur within the 12+ inch precipitation zone. The vegetative community is characterized by Idaho fescue (*Festuca idahoensis*), bluebunch wheatgrass, snowberry (*Symphoricarpos albus*), antelope bitterbrush (*Purshia tridentata*) and serviceberry (*Amelanchier utahensis*). Mountain brome (*Bromus carinatus*), mountain spray (*Holodiscus discolor*), curl-leaf mountain mahogany (*Cercocarpus ledifolius*) and mountain big sagebrush (*Artemisia tridentata ssp. vaseyana*) are other species associated with this community. Potential vegetative composition is typically 55% grasses, 15% forbs and 30% shrubs.

Pinyon-Juniper Woodlands: This community occurs on upper alluvial fans and in the higher mountainous regions with slopes of 30-50%. Elevations range from 5500 to 9000 feet. This community occurs within the 10-22 inch precipitation zone. Lower elevation (up to 6500 feet) communities are dominated by juniper, mid elevations (6500-7500 feet) by both pinyon and juniper, and high elevations (above 7500 feet) are predominately pinyon pine. These plant communities are characterized by single-leaf pinyon pine (*Pinus monophylla*) and Utah juniper (*Juniperus osteosperma*). There are localized ecosystems which support other juniper species such as common juniper (*Juniperus communis*) and Rocky Mountain juniper (*Juniperus scopulorum*). The understory, although sparse, consists of bluebunch wheatgrass, Sandberg's bluegrass, Thurber's needlegrass, basin wildrye and needle-and-thread grass (*Hesperostipa comata*). Juniper and pinyon trees dominate these areas; however, mountain big sagebrush, antelope bitterbrush and curl-leaf mountain mahogany can be found within the community. Heavily wooded areas provide little forage and have a large amount of bare ground. Potential vegetative composition is typically 40% grasses, 15% forbs and 45% shrubs and trees.

Riparian/Wetlands: Wetlands and small riparian communities occur within the project area and are associated with reservoirs, streams, springs and seeps where water is at or near the surface for the majority of the year. Species associated with this community include willow (*Salix* spp.), Kentucky bluegrass (*Poa pratensis*), curly dock (*Rumex crispus*), rabbit's foot grass (*Polypogon monspeliensis*), rushes (*Juncus* spp.) and sedges (*Carex* spp.). Potential vegetative composition is typically 70% grasses and grass-like species, 25% forbs and 5% shrubs.

Winterfat Bottoms: Winterfat communities generally occur in flats of drainage and flood plains. They typically occur in areas where slopes range from 0-2%. The elevation of this community ranges from

4000-6000 feet and within precipitation zones of 5-8 inches. Soils are typically sandy loam. The plant community is characterized and dominated by winterfat. It also includes vegetation such as bud sagebrush, Indian ricegrass and squirreltail. Potential vegetative composition is typically 10% grasses, 5% forbs and 85% shrubs.

Annuals: Although this vegetation type is not considered an ecological type, it is a plant community that accounts for portions of the project area. Areas that have been disturbed may be invaded by invasive annual species, sometimes to the exclusion of native species. Dominant plants are cheatgrass (*Bromus tectorum*) and/or halogeton (*Halogeton glomeratus*). Other plants often present in these areas are Russian thistle (*Salsola tragus*), clasping pepperweed (*Lepidium perfoliatum*), tumble mustard (*Sisymbrium altissimum*) and Russian knapweed (*Centaurea repens*).

Environmental Consequences

Proposed Action

Although there would be no direct impacts to vegetation due to oil and gas leasing because no authorization for surface disturbance would be granted at this time, there could be indirect impacts to vegetation from future projects on any leased parcels, from such activities as seismic studies, exploratory drilling, developing a well for production (with or without using HF), and reclamation activities. It is reasonably foreseeable that oil and gas exploration and development would occur over the next 10 years within the Assessment Area and that 65-100 acres will be disturbed by activities associated with oil and gas exploration and production including exploration wells, production infrastructures, road construction, and gravel pit expansion.

Removal and crushing of vegetation would occur through exploration and development activities. It is anticipated that the majority of the exploration is likely to occur in saltbush shrub or sagebrush type vegetation areas, rather than pinyon-juniper woodlands. Removal of vegetation would increase the amount of bare ground, thus increasing wind and water erosion; and increase the potential for invasion by nonnative and noxious species. Considering the amount of disturbance anticipated in the RDF scenario (65-100 acres), the impacts to vegetation are expected to be comparatively minor when compared to the areas offered for lease (approximately 195,732 acres) and temporary in nature because the majority of the disturbance (roads and pads) would be reclaimed. Impacts to vegetation from these activities would be considered under additional site-specific analysis when an action is proposed and specifics are known, like location, well depth, water consumption needs, and area of disturbance. Through this process, site-specific mitigation measures and BMPs would be attached as COAs for each proposed activity.

Based on the RFD, impacts to most vegetation communities from exploration/development are expected to be relatively minor, short term, and localized. In addition, site-specific mitigation measures, BMPs, and COAs would be implemented to reduce impacts. However, oil and gas development could have unknown effects on the quality and quantity of water in parcels where important wetland, springs, and playas occur. Riparian vegetation communities are fragile environments that could be impacted by disturbances to the timing and amount of water capture, water storage, and water release. If water resources are affected in these parcels, despite mitigation measures and BMPs, it could create changes in interspecies competition and potentially decrease biodiversity in riparian areas. There is a potential for more drought tolerant species and annual invasive species to outcompete native riparian species for limited nutrients and water.

Partial Deferral Alternative

Under this alternative, approximately 104,668 acres are proposed for deferral due to sensitive wetlands, seeps and/or springs, floodplains, playas, steep slopes, or historical features. If deferred these approximately 104,668 acres would not be subject to the potential effects described for the Proposed Action, involving temporary disturbance to 65-100 acres of vegetation. Parcels with extensive areas of riparian-wetland vegetation community would not be offered for lease sale. The remaining 91,064 acres that would be offered for lease sale under this alternative would be subject to the same potential effects as described for the Proposed Action.

Additional Resource Protection Alternative

Under this alternative, new stipulations would include the Water Resources stipulation which would cover approximately 58,000 acres and provide additional protection to riparian-wetland vegetation as compared to the Proposed Action. The level of protection would be somewhat less than under the Partial Deferral Alternative, because parcels would not be deferred pending the RMP update. However, the CSU stipulation provides adequate protection for riparian-wetland vegetation because it requires avoidance, minimization or mitigation of impacts within 500 feet of wetland/riparian areas. Also, the area protected would be greater than under the Partial Deferral Alternative because additional parcels with water resources concerns would be covered by the stipulation.

No Leasing Alternative

Under this alternative, no parcels would be offered for leasing in 2017 and the potential effects described above would occur on other leased parcels in the Battle Mountain District.

3.2.6 Forestry and Woodland Products

Affected Environment

The Assessment Area includes alluvial fans, foothills and valley bottoms which support mostly shrub and herbaceous species, and also consists of a large portion of barren or sparsely vegetated areas. As such there are no forestry or woodland concerns with the parcels in question, other than the potential for riparian associated species such as cottonwood and willows. Several seeps, springs, and drainages can be found within parcel boundaries, with the potential for impacts to riparian woodland species.

Cottonwoods (*Populus* spp.) are deciduous hardwood poplars belonging to the willow family. They are found naturally in riparian areas along stream banks, on the periphery of springs and ponds, and planted in agricultural areas within the lease area. These native cottonwoods rapidly grow to heights of greater than 80 feet with girths up to five feet, and are relatively short-lived (150 years). They can regenerate both from sprouting and seed. These species can also be propagated by transplanting suckers or small limbs. Currently, the Battle Mountain District protects the trees from any type of harvesting, including deadwood.

Willows (*Salix* spp.) are hardwood members of the Salicaceae family with deciduous foliage and affinities for riparian habitats with high water tables. Ranging in height from ten to 40 feet, there are more individual species of willow than any other hardwood found in the Assessment Area. Like their poplar

relatives, they require relatively large, consistent amounts of water to thrive and regenerate. They are not legally harvested in the Battle Mountain District. In the Assessment Area, willows can be found in monotypic communities or associated with other riparian vegetation such as sedge, rush and poplars.

Environmental Consequences

Proposed Action

There are minimal direct impacts associated with issuing an oil and gas lease. However, it is reasonably foreseeable that oil and gas exploration and development would occur over the next 10 years within the Assessment Area and 65-100 acres will be disturbed by activities associated with oil and gas exploration and production including exploration wells, production infrastructures, road construction, and gravel pit expansion. These actions would remove vegetation, potentially increasing wind and water erosion, and have negative impacts on riparian vegetation including cottonwoods and willows. Oil and gas exploration may use off-road vehicles and equipment, which could include four-wheel drive trucks and larger, heavier wheeled vehicles. Damage to woodland species such as cottonwood and willow could result from the contact of such equipment with individual plants. Based on the history of oil and gas exploration in the Battle Mountain District, it is likely that the majority of exploration and development efforts would be focused on the lower elevation alluvial fans and playas. If parcels were developed in the future, site-specific mitigation measures and BMPs would be attached as COAs for each proposed activity, which would be analyzed under additional site-specific NEPA analysis.

Partial Deferral Alternative

Under this alternative, approximately 104,668 acres are proposed for deferral due to sensitive wetlands, seeps and/or springs, floodplains, playas, steep slopes, or historical features. If deferred these approximately 104,668 acres would not be subject to the potential effects described for the Proposed Action. Because most of the areas with potential for cottonwoods and willows – wetlands, riparian areas, seeps and springs – would be deferred, the likelihood of impacts to these species would be minimized. The remaining 91,064 acres that would be offered for lease sale under this alternative would be subject to the same potential effects as described for the Proposed Action.

Additional Resource Protection Alternative

Under this alternative, effects to woodland resources would be similar to those described for the Partial Deferral Alternative. Areas that would have been deferred for reasons of wetlands, riparian areas, seeps and springs under the Partial Deferral Alternative would instead be protected by the Water Resources CSU stipulation, effective immediately upon lease sale. The stipulation would cover additional parcels, which may include some additional areas with potential for cottonwoods and willows. Although the CSU stipulation is less restrictive than deferral followed by NSO stipulations, the stipulation is sufficient to protect these resources.

No Leasing Alternative

Under this alternative, no parcels would be offered for leasing in 2017 and the potential effects described above would occur on other leased parcels in the Battle Mountain District.

3.2.7 Noxious Weeds and Invasive, Non-Native Species

Affected Environment

The BLM defines noxious weeds and invasive plants and weeds with different, interrelated definitions. Noxious weeds are designated by federal or state laws as generally possessing one or more of the following characteristics: aggressive and difficult to manage; parasitic; a carrier or host of serious insect or disease; or nonnative, new or not common to the U.S. Weeds are any plants that interfere with management objectives for a given area of land at a given point in time. Invasive plants are plants that are not part of (if exotic) or a minor component of (if native) the original plant community or communities, and have the potential to become a dominant or co-dominant species on the site if their future establishment and growth are not actively controlled by management interventions; or plants that are classified as exotic or noxious under state or federal law. Species that become dominant for only one to several years (e.g. short-term response to drought or wildfire) are not invasive plants.

The Federal Noxious Weed Act of 1974 (as amended by Section 15, Management of Undesirable Plants on Federal Lands, 1990) authorizes cooperation among federal and state agencies in the control of weeds. The BLM Battle Mountain District recognizes the current noxious weed list designated by the State of Nevada Department of Agriculture (NDA) statute, found in Nevada Administrative Code (NAC) 555.010. Currently the list contains 47 noxious weed species. When considering whether to add a species to the list, the NDA makes a recommendation after consulting with outside experts and a panel comprising Nevada Weed Action Committee members. Per NAC 555.005, if a species is found probable to be “detrimental or destructive and difficult to control or eradicate,” the NDA, with approval of the Board of Agriculture, designates the species as a noxious weed. The species is then added to the noxious weed list in NAC 555.010. Upon listing, the NDA will also assign a rating of A, B, or C to the species. The rating reflects the NDA view of the statewide importance of the noxious weed, the likelihood that eradication or control efforts would be successful, and the present distribution of noxious weeds within the state.

The BLM’s policy relating to the management and coordination of noxious weeds and invasive plant species is set forth in the BLM Manual 9015 – Integrated Weed Management. The BLM’s primary focus is providing adequate capability to detect and treat smaller weed infestations before they have a chance to spread. Noxious weed control is based on a program of prevention, early detection, and rapid response.

Noxious weeds and invasive exotic plants are highly competitive and aggressive, and spread easily. They typically establish and infest disturbed sites, along roadsides and waterways. Invasive exotic and noxious plants are commonly found in Nevada in areas where there are seeps and springs or year-round water. While, unlike roadways, these waterways are not always heavily disturbed, the fact of readily available water will increase the likelihood of all plant life including weeds. Wind, water, animals, vehicles/equipment, and humans spread invasive exotic and noxious weeds. Movement of plants from one site to another is greatly increased by introducing humans and equipment to an area. Changes in plant community composition from native species to non-native species can change fire regimes, negatively affect habitat quality, biodiversity, and ecosystem structure and function. There are known infestations of noxious and invasive exotic plants within the Assessment Area.

The Diamond Valley Weed Control District encompasses nearly all of Diamond Valley and many areas adjacent to Diamond Valley. Any activities within this District would need to comply with applicable requirements.

Invasive exotic species also include animals. Several invasive exotic animals can be found in Nevada and the surrounding states, such as *Dreissena polymorpha* (zebra mussel), *Lithobates catesbeianus* (bullfrog) and *Apis mellifera scutellata* (Africanized honeybee). However, there are no records of these or other invasive exotic animal species in or near the Assessment Area.

Environmental Consequences

Proposed Action

There would be minimal direct impacts from issuing new oil and gas leases because leasing does not directly authorize oil and gas exploration and development activities, and no ground disturbance would be authorized. The only impact that may occur would be an increase of movement of humans and vehicles to, from, and around the proposed parcels, which could slightly expand any disturbed areas within the sites and assist with the movement of noxious and invasive exotic seeds and other plant matter both within the sites and from the sites to other areas, or vice versa.

However, it is reasonably foreseeable that oil and gas exploration and development would occur within the next 10 years on leased parcels. Impacts from these activities would be considered under additional project- and site-specific NEPA analysis.

Based on historic information and anticipated activity, within the next 10 years, approximately 65-100 acres of surface disturbance associated with potential oil and gas exploration and development could be expected, including activities such as road construction and maintenance, vehicles traveling on transportation corridors, and construction of well pads, production facilities and staging areas. These subsequent activities could increase the potential for new and expanded infestations of noxious weeds and invasive and non-native species. Wind, water, recreation vehicles, livestock and wildlife would also assist with the distribution of weed seed into the newly disturbed areas. Parcels with extensive seeps, springs, and wetland-riparian areas may be especially susceptible to new infestations or spread of weeds, as weeds readily establish and spread along waterways and in wet areas as described above.

If parcels were developed in the future, additional site-specific mitigation measures, BMPs, and COAs would be implemented to reduce impacts. These would include, but not be limited to, washing equipment at washing stations before bringing it to the project area, and after use; using certified weed-free seed to stabilize any topsoil stockpiles and for interim and final reclamation; and monitoring and treatment programs to detect and halt the spread of any invasive weed species.

Partial Deferral Alternative

Under this alternative, approximately 104,668 acres are proposed for deferral due to sensitive wetlands, seeps and/or springs, floodplains, playas, steep slopes, or historical features. If deferred these approximately 104,668 acres would not be subject to the potential effects described for the Proposed Action, involving movement of humans and equipment and disturbance to 65-100 acres of soils and vegetation, increasing the likelihood of introduction and spread of weeds.

Parcels with extensive seeps, springs, and wetland-riparian areas would not be offered for lease sale. Weeds are particularly likely to become established in such areas, as described above; deferring these parcels would protect them from the impacts described for the Proposed Action.

Several parcels within Big Smoky Valley that are proposed for deferral (parcels 27, 28, 30, 31, 32, and possibly parts of 24 and 25) fall within a 1000-plus acre infestation of *Tamarix ramosissima* (salt cedar) and *Elaeagnus angustifolia* (Russian olive). If these parcels are deferred, this would greatly reduce the risk of spreading these plants within the parcels and from these parcels to other areas.

The remaining 91,064 acres that would be offered for lease sale under this alternative would be subject to the same potential effects as described for the Proposed Action.

Additional Resource Protection Alternative

Under this alternative, effects to weeds and invasive, non-native plants would be similar to those described for the Partial Deferral Alternative. Parcels with extensive seeps, springs, and wetland-riparian areas – where weeds are particularly likely to become established – would be protected by the Water Resources CSU stipulation, effective immediately upon lease sale. These parcels total approximately 58,000 acres. The stipulation would cover all parcels that were included in the Partial Deferral Alternative for reasons of water resources, and additional parcels having the target resources. The stipulation calls for avoiding impacts to the target resources, including an appropriate buffer (500 feet for water sources and riparian areas; 100 feet for ephemeral streams). Application of this stipulation would prevent impacts that would promote the spread of weeds in these areas. Although the CSU stipulation is less restrictive than deferral followed by NSO stipulations, it is sufficient to protect these resources.

No Leasing Alternative

Under this alternative, no parcels would be offered for leasing in 2017 and the potential effects described above would occur on other leased parcels in the Battle Mountain District.

3.2.8 Wildlife Resources

Affected Environment

The Battle Mountain District provides habitat for approximately 73 mammals, 231 birds, 24 reptiles, 7 amphibians, 19 fish species and numerous invertebrate species (many of which have yet to be inventoried or identified to species). Several of these wildlife species are likely to occupy the Assessment Area, including migratory birds, golden eagles and other raptors, greater sage-grouse, bats, pronghorn antelope, mule deer and several fish species. In particular, parcels that contain or are adjacent to riparian areas (e.g., streams, springs, seeps and wet meadows) are likely to support a higher density of wildlife species including endemic fish listed by NDOW as state sensitive species. Other important wildlife habitat types within the sale parcels include big sagebrush (mountain and Wyoming big sagebrush), low sagebrush, pinyon-juniper woodlands, aspen woodlands and salt desert scrub vegetation.

The parcels also include seasonally flooded playas. Throughout the Great Basin region there are a number of rare species that occur nowhere else but in the inhospitable environment of seasonally flooded playas, such as fairy shrimp which regenerate via tiny, undetectable cysts that can remain in a dry lake bed for

years until conditions are optimum for hatching. Far from major rivers or lakes, playas are often the only water available to wildlife in the desert; pronghorn and other animals may gather there to drink.

The following sections briefly discuss select wildlife species or taxa (groups of species) that are likely to occur in the Assessment Area and for which federal law or BLM policy and guidance directs management actions.

Big Game: The Assessment Area provides habitat for big game species such as pronghorn antelope (*Antilocapra americana*) and mule deer (*Odocoileus hemionus*). The central portion of the Big Smoky Valley Complex is a corridor for mule deer. The western edge of the complex borders desert bighorn sheep habitat. Pronghorn antelope and mule deer are indigenous to western North America, found nowhere else in the world.

Pronghorn (sometimes called pronghorn antelope) are found primarily in the valleys between mountain ranges in northern and central Nevada. Pronghorn prefer gentle rolling to flat, wide-open topography. Low sagebrush and northern desert shrubs are the preferred vegetation types. Areas such as these with low understory allow pronghorn to see great distances and to move quickly to avoid predators. Over 150 different species of grasses, forbs and browse plants are eaten by pronghorn, allowing them to occupy a variety of habitat types. Succulent plants and sprouts are preferred. Some of the main components of pronghorn diet in many locations include sagebrush, antelope bitterbrush, saltbrush, rabbitbrush, cheatgrass, Indian rice grass, crested wheat grass, lambsquarter and shadscale.

Mule deer use a variety of vegetation types and habitats seasonally within the Assessment Area in their pursuit of forage, thermal cover and escape cover for seasonal needs. Vegetation important for mule deer as food and/or cover includes serviceberry, snowberry, mountain mahogany, sagebrush, aspen, cottonwood, willows, chokecherry, wild roses, pinyon pine, juniper, *eriogonum* spp., arrowleaf balsamroot, penstemon, *phlox* spp., sorrel, hawksbeard, lupine and numerous forbs. Riparian vegetation along streams, meadow areas and aspen stands are important fawn-rearing areas.

Parcels 1 and 2 overlap crucial mule deer winter range as identified in the Tonopah RMP. The Shoshone-Eureka RMP does not delineate mule deer or pronghorn seasonal use areas, but NDOW identified mule deer crucial winter range, pronghorn crucial winter range, and/or mule deer movement corridors on more than 50 additional parcels in the Mt. Lewis Field Office area. The most recent published NDOW data set for these seasonal habitats is the 2014 NDOW Corporate Data Set (see lists in Appendix C.2).

Pygmy rabbits: Pygmy rabbits (*Brachylagus idahoensis*) are North America's smallest rabbits and the only ones that construct their own burrows. These burrows usually occur in stands of tall, dense sagebrush in areas with deep, loose soils. Big sagebrush is the primary food and may comprise up to 99 percent of food taken in winter and 51 percent in the summer. Wheatgrass and bluegrass are highly preferred foods in the summer. Cheatgrass invasion is detrimental to pygmy rabbits. Shrub cover is necessary for protection during dispersal and cheatgrass monocultures may provide a barrier to dispersal. Pygmy rabbits have SSS status.

Bats: Bats inhabit or utilize many niches across Nevada, including the Battle Mountain District. These include caves, abandoned mines, cliffs, springs, riparian, aspen, pinyon-juniper, subalpine coniferous forest and desert shrub habitats. Bats frequently forage in riparian areas and some of the most important

bat habitat exists along perennial stream corridors. Bats are efficient insectivores and also serve a vital role in plant pollination. There are 16 species of bats listed as SSS in the Battle Mountain District.

Fish: Several fish species of conservation concern live within the Battle Mountain District. Fish species of conservation concern are known to occupy habitat in or near seven of the parcels offered for leasing.

- **Big Smoky Valley tui chub** (*Siphateles bicolor* spp.) and **speckled dace** (*Rhinichthys osculus* spp.) are in the Charnock Springs Complex which overlaps parcels 20 and 21.
- **Big Smoky Valley tui chub** is also found on parcel 14.
- **Fish Creek Springs tui chub** (*Siphateles bicolor euchila*) is a BLM Sensitive and State-protected species known from only one locality in Fish Creek Springs and their outflow in Fish Creek, Little Smoky Valley, within 700 meters of parcel 66. The subspecies was proposed for listing in 1984; USFWS withdrew the proposed rule in 1986 because all known threats at that time had been ameliorated.
- **Speckled dace** (*Rhinichthys osculus* spp.) occupy Shipley Hot Spring, within 400 meters of parcel 55. This speckled dace has not been identified as to subspecies, and may be unique to that location.
- **Railroad Valley tui chub** (*Siphateles bicolor* spp.) is a BLM Nevada Sensitive fish species which occupies habitat approximately 2.5 miles from parcel 106.

Amphibians: Columbia spotted frog (*Rana lueiventris*, Great Basin Distinct Population Segment) is found in parcel 14. The species is protected under Nevada Administrative Code (NAC) 503.075; per NAC 503.090 and 503.093, no person shall capture, kill or possess without written permission from NDOW. BLM is signatory to a conservation agreement for this species. Columbia spotted frog meets the criteria in BLM Manual 6840 to be considered a BLM Sensitive species.

Other species of conservation concern with known occurrences in the Antelope and Big Smoky Valley are western toad (*Anaxyrus borea*), chorus frog (*Pseudacris triseriata*), and Great Basin spadefoot (*Spea intermontana*). These frogs remain close to vital ephemeral aquatic habitats since they provide excellent mating, breeding, and hibernation grounds.

Migratory Birds: A wide variety of bird species protected by the MBTA are found throughout all habitat types within the Assessment Area. These include raptors (i.e., hawks, eagles and owls) and many songbirds. Major avian communities within the Battle Mountain District occur in sagebrush, salt shrub, pinyon-juniper, montane, riparian and aspen habitats. Species commonly occurring in pinyon-juniper habitats and that are known to occur or have the potential to occur in the Assessment Area include the pinyon jay, western bluebird, Virginia's warbler, black-throated gray warbler and Scott's oriole. Sage thrasher, Brewer's sparrow and sage sparrow are sagebrush obligates, while loggerhead shrike and green-tailed towhee also have potential to occur in the sagebrush habitats. The Assessment Area includes riparian vegetation associated with wetlands, seeps and springs; these features are prominent in numerous proposed lease parcels. Many songbird species are heavily dependent on healthy riparian systems. Seventy-seven bird species have been identified as either riparian obligate or riparian dependent in the western United States (Rich 2002) and these communities are requisite for a diverse migratory bird community. A list of common migratory bird species known to occur in the vicinity of the project, compiled from review of various sources (Audubon, BLM, e-bird, NDOW, NHP, USFWS), includes Western meadowlark, sage sparrow, horned lark, barn swallow, mountain chickadee, Western tanager,

spotted towhee, yellow warbler, Western wood peewee, killdeer, loggerhead shrike, eastern kingbird, western bluebird and common raven.

The Assessment Area also includes extensive playas, which if consistently flooded during the breeding season may provide breeding habitat for snowy plover, a BLM Nevada Sensitive species; and even if only occasionally flooded, would then provide feeding and stopover habitat for migrating shorebirds and waterfowl. The western snowy plover has previous occurrence records near Big Smoky Valley. Snowy Plover habitat also exists in Diamond Valley in the vicinity of the playa, and the many springs and wetlands located there.

Eagles: Golden eagles are widespread year-round residents across the Battle Mountain District. Golden eagles typically nest on large cliffs and forage on small mammals such as jackrabbits, cottontails and ground squirrels in open shrub, grassland and forested habitats. Bald eagles do not nest in the Battle Mountain District, but they do occur during the winter near relatively large, open bodies of water.

Other raptors: There are known raptor nests on Parcels #043 and #044. The exact species are not known. Eagles, ospreys, hawks, falcons, kites, owls, vultures and all other native North American birds of prey are strictly protected, including a prohibition against the taking or possession of their parts such as feathers or talons; exceptions for individuals require permits from the U.S. Fish and Wildlife Service.

Greater Sage-Grouse: Greater Sage-Grouse occurs within sagebrush habitat in Eureka, Lander and northern portions of Nye County on the Battle Mountain District. Greater Sage-Grouse are known to occur in foothills, plains and mountain slopes where sagebrush and meadows are in close proximity, and variously use these habitats for breeding, nesting, early and late brood rearing, and wintering. Areas used often vary by season, but may be year-round in some areas. The Assessment Area includes several parcels having PHMA, GHMA and OHMA habitat mapped under the GRSG Plan Amendment, as described under Regulatory Framework above. Review of the available data indicates that nesting, brooding, summer, and winter habitat occurs not only in PHMA and GHMA, but also in many areas of OHMA.

Environmental Consequences

Proposed Action

Since the sale of parcels and issuance of oil and gas leases is strictly an administrative action, the act of offering, selling, and issuing federal oil and gas leases would not produce any direct impacts to wildlife resources. However, there may be indirect impacts to wildlife resources from future ground disturbing activities related to oil and gas exploration and development on any leased parcels. At this time the specific acres that would be disturbed and the types of habitat that would be disrupted cannot be determined, as the BLM would not receive any applications for exploration or development until after the lease sale.

If parcels were leased and developed in the future, additional site-specific mitigation measures and BMPs would be included in the proposal or attached as COAs for each proposed activity, which would be analyzed under their own additional site-specific NEPA analysis with consultation with NDOW and USFWS. In addition, to reduce potential impacts to wildlife, stipulations or lease notices are attached to parcels as listed in Appendix B:

- Greater Sage-grouse (stipulations for parcels with PHMA or GHMA or near leks)
- Mule Deer Winter Range in Tonopah Field Office (stipulation for parcels having the habitat)
- Threatened, Endangered and other Special Status Species (lease notice, all parcels)
- Migratory Birds (lease notice, all parcels)

Stipulations provide RMP direction that must be followed in the specified habitat. Lease notices alert prospective lessees of other laws or regulations that would apply if a given resource or circumstance is encountered.

Stipulations cannot be attached to a parcel to protect resources that are off-parcel; however, off-parcel concerns such as the rare fish habitats near parcels 55 and 66 would be addressed by the additional site-specific, project-specific analysis that would be conducted at the time of any APD or other proposal, including consultation between BLM and USFWS.

In general, animals capable of doing so would avoid and move away from the associated noise and activities; some mortality could occur among animals unable to move away; and there would be some loss of habitat. Based on the Battle Mountain District's RFD scenario, oil and gas exploration and production activities would continue to be minimal with an expectation of no more than 25 wells being drilled disturbing a total of approximately 65-100 acres over the next ten years. A 100-acre total disturbed area would represent 0.05% of the 197,012 acres which make up the 106 lease parcels to be offered under the Proposed Action (195,732 acres), plus the reinstatement parcel (1280 acres). These activities are temporary in nature and wildlife would move back into the area after successful reclamation.

Based on the available resource protection measures in place, potential future exploration or development within most of the parcels within the Proposed Action should not have any long-term or substantial impacts to wildlife resources.

However, several parcels are largely or entirely composed of wetland-riparian areas and playas that many wildlife species depend on. Oil and gas development without proper engineering controls, BMPs, and mitigation could cause disproportionate and, in some cases, potentially irreversible habitat loss to these dependent species.

Wildlife riparian habitat is directly correlated with the surface water hydrology consequences (Section 3.2.4). As described in that section, impacts could include:

- disproportionate effects of any surface disturbance, due to the habitat's value to wildlife;
- road building redirecting water flows;
- contaminants from accidental spillage spreading throughout the system;
- human activity affecting turbidity and dissolved oxygen content.

Additional impacts of concern to wildlife would be noise and human activity displacing animals or otherwise disrupting their behavior. This, too, would be a disproportionate impact in wetland and riparian areas which are far more rare in this arid region, support higher densities and greater diversity of wildlife, and are more crucial to many species of management concern, as compared to upland areas.

Fish species of conservation concern could be seriously impacted by any impact to water quality or quantity in the springs they occupy. Big Smoky Valley tui chub and speckled dace would be especially vulnerable as they occupy habitat on proposed lease parcels.

Lahontan cutthroat trout (*Oncorhynchus clarkii henshawi*), an ESA-listed Threatened species, occurs in Pete Hanson Creek which terminates in Parcel 37. Although upstream habitat is not usually connected by perennial flow with Parcel 37, USFWS expressed concern that the fish could potentially move into the parcel via intermittent stream channels that fill during high flow events. On March 27 2017, the BLM wildlife biologist and surface water hydrologist conducted a site visit to Pete Hansen Creek's lower reaches on Parcel 37. They confirmed that the stream channel on the parcel carries only intermittent water flows; and concluded that this reach of Pete Hanson Creek is not capable of providing suitable habitat for Lahontan cutthroat trout, even in the event of unusually heavy flow that could convey the trout from its normal habitat which is several miles upstream. The channel geomorphology is poorly-incised, and surrounded by a broad, flat floodplain composed of fine-grained materials. In moderate floods, the floodwaters would spread across the floodplain as a shallow sheet, creating a poor environment for Lahontan cutthroat trout. For larger floods, the flow in the floodplain may be deep enough to convey the trout, but the fine-grained sediment would be brought into suspension and degrade water quality. However, if exploration and development are proposed on the parcel, wetlands resources on and near the parcel would be provided with appropriate protection at that time.

Amphibian species of concern within Big Smoky Valley include Columbia spotted frog, western toad, chorus frog, and Great Basin spadefoot. These frogs remain close to vital ephemeral aquatic habitats since they provide excellent mating, breeding, and hibernation grounds. Seeps and springs found in Big Smoky Valley provide essential habitat for these species and impacts to these water sources could impact local population levels of these frogs.

Distribution of water is one of the most limiting factors for pronghorn and mule deer. Any adverse effects to these important springs and wetland areas could influence populations of pronghorn and mule deer. Noise and human activities associated with oil and gas exploration or development without proper seasonal controls or other mitigation could also disturb or displace mule deer and pronghorn from crucial winter range or migration corridors, potentially limiting population numbers.

Western snowy plover food consists of immature and adult forms of aquatic and terrestrial invertebrates. Changes in water quantity and quality could impact invertebrate populations, thus reducing food sources for plovers. Many migratory bird species are also heavily dependent on healthy riparian systems. Seventy-seven bird species have been identified as either riparian obligate or riparian dependent in the western United States. Riparian under-story, mid-story, and canopy cover are requisite for a diverse migratory bird community. Woody components of riparian systems, such as willows and cottonwoods, are important habitat features and can be affected by changes in the water table.

Greater sage-grouse do not require open water for day-to-day survival if succulent vegetation is available; they use free water if it is available, however. Their distribution is seasonally limited by water in some areas. In summer, greater sage-grouse in desert regions often occur only near streams and springs, which also provide important brood rearing habitat.

Besides redirecting surface water, building access roads within wetland areas and playas could degrade the habitat for some aquatic species in other ways. Access roads can cause fragmentation of habitat, introduction of invasive species into highly diverse wetland and riparian areas, and increased erosional processes due to removal of vegetation. This could impact nutrient levels, temperature, and pH levels of aquatic habitat; and could indirectly impact food sources for wildlife due to changes in vegetation. If

certain thresholds of degradation are crossed within fragile wetland habitats, mitigation would require great input to achieve pre-disturbance conditions of wildlife habitat.

Habitat loss, degradation, and fragmentation are widely accepted causes contributing to raptor population declines worldwide. Availability of nest sites and food are considered limiting factors for raptor populations. Raptors compensate for the loss of foraging and nesting habitat by abandoning established territories and/or attempting to utilize less productive or already occupied territories. A number of raptor species use riparian or wetland vegetation in this region, including the bald eagle, Swainson's hawk, and northern harrier. The decline of cottonwoods and willows in the arid West has been associated with hydrological alterations that deplete surface and ground water (USFWS 2008).

Partial Deferral Alternative

Under this alternative, approximately 104,668 acres are proposed for deferral due to sensitive wetlands, seeps and/or springs, floodplains, playas, steep slopes, or historical features. If deferred these areas would not be subject to the general potential effects described for the Proposed Action, involving temporary displacement of animals due to noise and activity, some mortality of animals unable to move, and disturbance to 65-100 acres of vegetation.

Parcels with extensive riparian or wetland areas would not be offered for lease sale; this would greatly reduce the potential for disproportionate and potentially substantial impacts to the many wildlife taxa that concentrate in wetlands and riparian areas, as described for the Proposed Action. Parcels proposed for deferral include several with aquatic habitat for fish of conservation concern on the parcel.

Deferral of parcels that include wetlands, floodplains and seasonally flooded playas would reduce the likelihood of impacts to snowy plover habitat, and seasonal feeding and stopover habitat for migrating shorebirds and waterfowl.

The remaining 91,064 acres that would be offered for lease sale under this alternative would be subject to minor, short-term potential effects to upland habitats, as described for the Proposed Action.

Additional Resource Protection Alternative

This alternative would protect crucial seasonal wildlife habitats that were not addressed by the Proposed Action or the Partial Deferral Alternative. Parcels (approximately 80,500 acres) that were identified as having crucial pronghorn winter range or mule deer winter range in the 2014 NDOW Corporate Data Set would be addressed by new seasonal timing limitation (TL) stipulations or lease notices under this alternative, restricting use during the critical seasons to protect populations from disturbance as NDOW recommended; while parcels NDOW identified to BLM during the EA process as intersecting mule deer movement corridors would be addressed by a lease notice (see Appendix C.2). Mule deer winter range areas on parcels 1 and 2 are already covered by a stipulation in the Tonopah RMP which would apply under all alternatives (see Appendix B). The new stipulation for pronghorn seasonal habitat uses the dates that NDOW recommended during the EA process. The new stipulation for mule deer seasonal habitat applies the existing stipulation from the Tonopah RMP to parcels in the Mt. Lewis Field Office area, and applies it to the area identified by NDOW 2014 data in the Tonopah Field Office area.

Under this alternative, new stipulations would also include the Water Resources stipulation (Appendix C.2) which would provide additional protection to aquatic and riparian-wetland habitats as compared to the Proposed Action. The area of aquatic, riparian/wetland, playa and floodplain habitat protected would be greater than under the Partial Deferral Alternative. The level of protection would be somewhat less than under the Partial Deferral Alternative, because parcels would not be deferred pending an RMP update; rather, all proposed parcels could be leased, with stipulations effective immediately.

This CSU stipulation would provide additional protection for riparian-wetland habitat and dependent species as it requires additional environmental review, engineering controls, and mitigation measures within 500 feet of wetland/riparian areas. It would ensure protection from impacts, including indirect impacts such as run-off, erosion, sedimentation, or accidental contamination that could extend into the protected area from a greater distance.

The Water Resources stipulation would protect aquatic habitat for fish and amphibians of conservation concern on the parcels. The stream channel on parcel 37 carries only intermittent water flows, but would be protected by this stipulation. This alternative would also apply the Water Resources stipulation to parcel 14, which would ensure that any habitat for the Columbia spotted frog is protected throughout the parcel.

The Water Resources stipulation also applies to floodplains and playas. This provides protection to snowy plover habitat, and seasonal feeding and stopover habitat for migrating shorebirds and waterfowl, which is not specifically provided under the Proposed Action.

No Leasing Alternative

Under this alternative, no parcels would be offered for leasing in 2017 and the potential effects described above would occur on other leased parcels in the Battle Mountain District.

3.2.9 Wild Horses and Burros

Affected Environment

The Battle Mountain District administers 28 HMAs encompassing approximately 3.6 million acres of public land. Two other HMAs within the district boundary are administered by adjoining Districts. The Battle Mountain District also cooperatively manages several United States Forest Service (USFS) Wild Horse or Burro Territories (WHTs and WBTs). The estimated Battle Mountain District population as of January 1, 2017 is approximately 5,841 wild horses and 595 wild burros.

HMAs are areas identified in Land Use Planning for long term management of wild horses or burros and are designated “Special Management Areas.” Many HMAs encompass mountain ranges and include mountain browse, meadow, mahogany and pinyon and juniper vegetation types interspersed with perennial streams and springs. Wild horses and burros also use sparsely vegetated, rocky terrain and habitat with limited water. Winter habitat typically consists of valley bottoms and lower elevations that support Wyoming big sagebrush, winterfat or other salt desert shrub vegetation. Wild burros are able to thrive in more desert type conditions than wild horses. See the Vegetation (3.2.5) and Water (3.2.4) sections of this EA for descriptions of these resources which comprise the habitat for wild horses and burros.

Wild horse and burro populations generally move throughout or between HMAs in response to a number of factors. Wild horse and burro distribution throughout HMAs varies greatly throughout the year and is influenced by forage and water availability, as well as climatic factors such as precipitation and temperature. Demographic factors such as population size and resulting animal density (competition) also influence herd movement and distribution. Lastly, human presence causes disturbance due to OHV use, roads, mining, exploration, recreation and other uses that occur on the public lands. The Battle Mountain District has identified core use areas within the HMAs which indicates where animals have been observed most consistently since inventory flights began in the 1970s and particularly within the past 20 years. These core use areas can assist management in understanding what areas provide the more preferred habitat for the wild horses and burros, as well as monitor changes in distribution or use patterns over time.

Management of wild horses and burros involves periodic inventory activities, typically completed with helicopter, as well as on the ground monitoring of habitat, animal health and distribution. Wild horses foal primarily in the spring, with the peak foaling season considered March 1 through June 30. Burro populations may foal year round and may not increase at the same levels as wild horses. Throughout the Battle Mountain District, populations typically increase by 10-22% annually. Appropriate Management Levels (AMLs) have been established for all HMAs administered by the District. When inventory and other data indicate that the AMLs have been exceeded, gathers are planned to reduce the populations within HMAs to the AML in order to prevent deterioration of the range associated with an overpopulation of wild horses or burros. Fertility control treatments are often administered to help slow population growth rates.

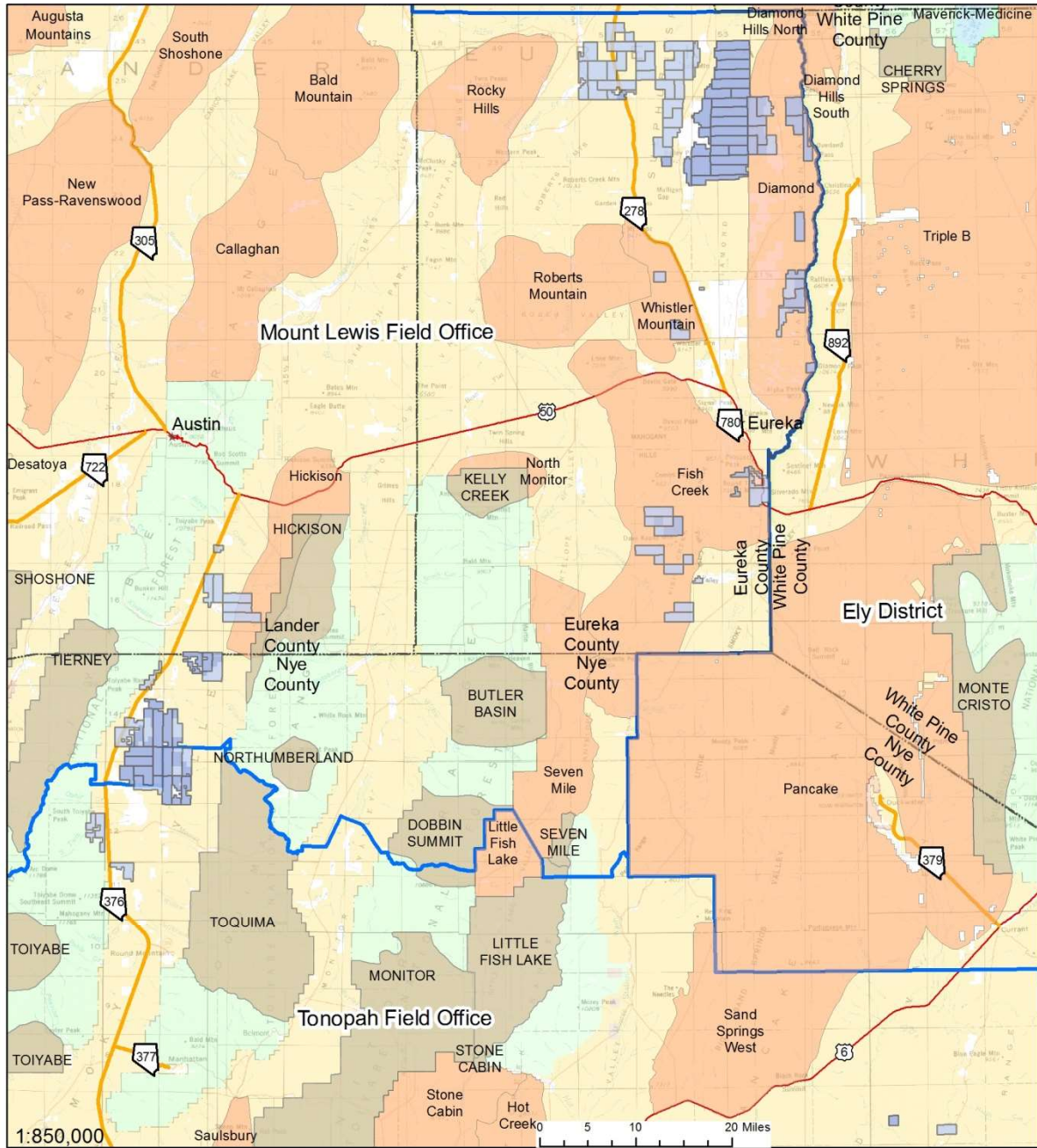
The 2017 lease sale includes proposed parcels located within four HMAs managed for wild horses or burros (Table 5). All are within the Mt. Lewis Field Office area. These four HMAs total 493,752 acres in area, of which 47,734 acres are within proposed 2017 lease sale parcel boundaries. Figure 6 displays the HMAs, all proposed lease parcels under the Proposed Action, and parcels recommended for deferral under the Partial Deferral Alternative.

Table 5. Herd Management Areas with proposed lease parcels.

HMA	BLM HMA Acres	AML	Estimated Population ¹	Proposed Lease Sale Parcel Acres in HMA
Hickison	57,285	16-45	130 ²	3508
Diamond	143,847	151	363	24,375
Whistler Mountain	42,606	14-24	25	2790
Fish Creek	250,069	101-170	476	17,061
Total	493,752	282-390	969	47,734

¹2016 post-foaling population estimates

²Estimated population includes USFS Hickison Wild Burro Territory and BLM Hickison HMA



2017 BMDO Oil & Gas Parcel Map with Deferrals

<p>LEGEND</p> <ul style="list-style-type: none"> OG Lease Sale Parcels-June 2017 Recommended Deferral under Partial Deferral Alternative County Boundary Mount Lewis Field Office Tonopah Field Office Herd Management Area (HMA) USFS Burro Territory 	<ul style="list-style-type: none"> Bureau of Indian Affairs Bureau of Land Management Department of Energy Forest Service Fish and Wildlife Service Private Water 	<p>United States Department Of The Interior</p> <p>Bureau of Land Management Tonopah Field Office 1553 S. Main Street/P.O. Box 911 Tonopah, NV 89049</p> <p>No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.</p>
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Nevada Map Extent

Figure 6. Wild horse and burro Herd Management Areas, with proposed lease parcels (Proposed Action) and recommended deferrals (Partial Deferral Alternative).

Very little oil and gas exploration or development has occurred or is anticipated in the Assessment Area, including the HMAs (see Sections 2.4.1 and 2.4.2). The RFD scenario based on recent trends predicts that within the entire Battle Mountain District, approximately 25 wells would be drilled and 65-100 acres of surface disturbance associated with potential oil and gas exploration and production activities could be expected to occur over the next ten years. The anticipated disturbance under the RFD scenario represents a very small fraction of the 3.6 million acres of HMA administered in the District. These activities may or may not occur within HMAs or in areas that could affect wild horses or burros; and any potential effects to wild horses or burros would be addressed in future additional project-specific, site-specific analyses.

Hickison HMA

The Hickison HMA is administered with the adjoining USFS Hickison Wild Burro Territory (WBT). The BLM-managed Hickison HMA includes the Kingston and Simpson Park Allotments. The Hickison HMA/WBT is located approximately 12 miles southeast of the town of Austin in Lander County, covers is approximately 26 miles long and averages about 10 miles wide, and contains 57,285 acres of public lands. The USFS-administered WBT is located east of the HMA, and covers a total of 52,570 acres of public land. The U.S. Highway 50 right-of-way fence separates the northern portion of the Hickison HMA from the southern portion. Approximately 19,000 acres of BLM managed land is in the northern portion and is unavailable to wild burro use. The HMA and WBT are managed for wild burros, and there are no wild horses known to inhabit the HMA or WBT south of U.S. Highway 50. No proposed parcels are in the WBT.

It is believed that burros use higher elevations in the USFS Hickison WBT predominantly in summer and move to lower elevations during the winter months. Inventory flights conducted since 2002 show that approximately 60% of the burro observations were within the WBT, and 40% within the Hickison HMA. Within the HMA, utilization is highest in the northern portion of the HMA, and near the Spencer Hot Springs.

Wild burros are distributed mainly throughout the north eastern portion of the Hickison HMA near the Spencer Hot Springs, the only perennial water source available to wild burros in the BLM managed HMA. The abundance of tracks and trailing seen near the hot springs indicates concentrated use by burros in the area.

The vegetation communities in the Hickison Burro HMA are not highly productive and vegetation is sparse. Due to the limited nature of vegetation, the burros must move throughout the HMA and WBT to locate forage throughout the year.

Portions of three proposed lease parcels are within the Hickison HMA boundaries (Table 6). These parcels are not located within areas known to be heavily utilized by wild burros as derived through long term field monitoring and inventory flights, though burros do move through those portions of the HMA. None of these parcels are proposed for deferral under the Partial Deferral Alternative.

Table 6. Hickison HMA proposed lease parcels.

Parcel Number	Total Acres	Acres within HMA	HMA acres proposed for deferral
NV-17-06-030	1915	792	0
NV-17-06-031	1915	982	0
NV-17-06-032	2541	1733	0
Total Acres	6371	3507	0

Diamond HMA

The Diamond HMA encompasses the west side of the Diamond Mountain Range north of Eureka, Nevada and is managed as a Complex with the Diamond Hills South HMA managed by the Ely District and the Diamond Hills North HMA managed by the Elko District. The Battle Mountain District Diamond HMA is 43 miles long and 7.8 miles wide at the widest point. Elevations exceed 10,000 feet at Diamond Peak. The HMA is comprised of steep canyons that run east and west throughout the west slope of the Diamond Range. The western portion of the HMA is comprised of sagebrush dominated foothills and valley bottoms that support greasewood and salt desert shrub vegetation. The far western portion of the HMA consists of playa. Wild horses generally use the higher elevations in summer months and the lower foothills and valley during winter months.

Wild horses can move throughout the HMA but are restricted to various degrees due to allotment fences and segments of private land. Use by wild horses is concentrated in portions of the HMA as indicated by inventory flight and field data, and is influenced by preferred watering and foraging areas. These areas include the vicinities of Minoletti Creek and Black Point in the southern third of the HMA, Threemile and Telegraph Canyon in the central portion of the HMA, and Judd, Fourmile and Davis Canyon areas in the northern portion of the HMA. Despite the allotment boundary fences, the horses are able to move around the various drift fences, and travel north and south in the highest elevations and along the mountain ridgeline which is not fenced. Many canyons have small springs and streams that are used by wild horses, and relied upon heavily in summer months.

There are 14 proposed lease parcels in the Diamond HMA (Table 7). The parcels are located within wild horse core use areas. Most parcels located in the high elevation areas involve numerous spring sources and steep slopes. A few parcels are also located on the valley floor on the west portion of the HMA and are used less frequently by wild horses. All parcels intersecting this HMA are proposed entirely or in part for deferral under the Partial Deferral Alternative (Table 7), including the spring sources and steep slopes.

Table 7. Diamond HMA proposed lease parcels.

Parcel Number	Total Acres	Acres within HMA	HMA acres proposed for deferral
NV-17-06-92	2099	2099	640
NV-17-06-93	2054	2054	2054
NV-17-06-94	1840	1840	480
NV-17-06-95	1026	1026	1026
NV-17-06-96	1921	1921	1921
NV-17-06-97	2190	2150	2150
NV-17-06-98	1925	1925	1120
NV-17-06-99	2547	2214	2214
NV-17-06-100	1791	1791	1791
NV-17-06-101	1923	1829	1829
NV-17-06-102	1920	1920	640
NV-17-06-103	1291	1133	1133
NV-17-06-104	610	575	575
NV-17-06-105	1958	1958	1958
Total Acres	25,095	24,435	19,531

Fish Creek HMA

The Fish Creek HMA is located south of Eureka in Eureka County, Nevada, mostly south of U.S. Highway 50. The small portion north of U.S. Highway 50 is managed with the Roberts Mountain HMA. The portion south of U.S. Highway 50 totals 230,675 acres, and is 36 miles long and 16 miles wide. The HMA is comprised of mid elevation mountains, PJ woodlands and valleys that support winterfat and sagebrush communities. Elevations reach 9500 feet on Prospect Peak in the north portion of the HMA and 10,100 feet on Ninemile Peak in the southern portion of the HMA. Valleys average 6200 feet in elevation. Water sources are scattered and limited, consisting of small mountain springs and developed water sources with pipelines and troughs, or wells. Wild horses are well scattered throughout the summer months utilizing both lower and higher elevations, with lower elevations being used predominantly during winter months. Distribution of wild horses in the HMA is higher in the foothills and valley bottoms. Higher elevations are predominantly covered with Pinyon and Juniper trees and are not utilized as frequently. There are few fences to impede movement in the HMA. The Fish Creek HMA is adjacent to the Sevenmile HMA and Pancake HMA, and movement between the HMAs is known to occur.

The parcels within the Fish Creek HMA (Table 8) are located in two separate areas. The northern parcels are located in close proximity to U.S. Highway 50 in the northeast portion of the HMA. Wild horses are not known to use the area, and have not been observed in the vicinity during inventory flights since 1980. Wild horses likely avoid the area due to human presence as it is in close proximity to historic mining, the town of Eureka; and the area is frequented by hunters and recreationists.

The remaining parcels are located in the center of the HMA in foothills supporting mixed salt desert shrub vegetation, and mid and higher elevations dominated by Pinyon and Juniper and black and Wyoming big

sagebrush. Several of the parcels are within the core use areas that are used frequently by horses, on a year-round basis. Three small springs exist in one of the parcels. Four of the parcels intersecting this HMA are proposed entirely or in part for deferral under the Partial Deferral Alternative (Table 8), including the springs and parts of the core use areas.

Table 8. Fish Creek HMA proposed lease parcels.

Parcel Number	Total acres	Acres within HMA	HMA acres proposed for deferral
NV-17-06-042	1273	1273	0
NV-17-06-043	1280	1062	0
NV-17-06-044	1920	1691	0
NV-17-06-045	1913	1913	0
NV-17-06-046	1920	1920	640
NV-17-06-047	2560	2560	1920
NV-17-06-048	1913	1913	0
NV-17-06-049	1280	1280	0
NV-17-06-067	982	982	982
NV-17-06-090	1497	840	120
NV-17-06-091	2219	1614	0
Total Acres	18,757	17,048	3662

Whistler Mountain HMA

The Whistler Mountain HMA is located northwest of Eureka, Nevada and is borders the Roberts Mountain HMA. It is managed as a Complex with the Roberts Mountain HMA and the small portion of the Fish Creek HMA north of U.S. Highway 50. It is 16 miles long and 7 miles wide, and totals just 42,606 acres in size. The HMA consists of low mountains covered in Pinyon and Juniper and valleys and foothills that support Wyoming big sagebrush communities. The tallest point is Mt. Hope in the northern portion of the HMA at 8317 feet. Waters are limited to a few small springs. Use of the HMA is seasonal and incidental, as many of the horses rely on habitat in the Roberts Mountain HMA where water is more plentiful.

An allotment fence separates the Whistler Mountain HMA from the Roberts Mountain HMA, but horses are known to go through open gates and breaks in the fence. There is no fence separating the Whistler HMA from the Kobeh Valley Herd Area to the west, and the northern portion of the Fish Creek HMA.

There are two parcels in the HMA (Table 9). Parcel 051 is not within a core use area and not in an area frequented by wild horses. Parcel 050 includes three spring sources that can be used by wild horses, and is considered within core use area. Part of Parcel 050 is proposed for deferral under the Partial Deferral Alternative, including the spring sources.

Table 9. Whistler Mountain HMA proposed lease parcels.

Parcel Number	Total Acres	Acres within HMA	HMA acres proposed for deferral
NV-17-06-050	1920	1920	433
NV-17-06-051	870	870	0
Total Acres	2790	2790	433

Environmental Consequences

Proposed Action

The sale of parcels and issuance of oil and gas leases is strictly an administrative action. The act of offering, selling, and issuing federal oil and gas leases would not have impacts to wild horses or burros. On-the-ground impacts would not occur until a lessee applies for and receives approval to drill on the lease. The BLM cannot determine at the leasing stage whether or not a proposed parcel will actually leased, or whether or not the lease would be explored or developed. Consequently, the BLM cannot determine exactly where on a lease a well or wells may be drilled or what technology may be used to drill and produce wells, so the impacts listed below are derived from historical information and what might be proposed in the near future. Impacts of any future proposed exploration or development would be analyzed under additional site-specific, project-specific environmental analysis to assess the potential impacts to wild horses or burros and their habitat in these areas.

It is reasonably foreseeable that oil and gas exploration and development would occur over the next 10 years within the Assessment Area and 65-100 acres will be disturbed by activities associated with oil and gas exploration and production including exploration wells, production infrastructures, road construction, and gravel pit expansion. These actions would remove vegetation, potentially increasing wind and water erosion; cause soil compaction; and remove and crush vegetation. See the Soils (3.2.2), Vegetation (3.2.5) and Water (3.2.4) sections of this EA for further discussion of potential impacts to these resources which constitute the habitat used by wild horses and burros.

The existing Shoshone Eureka and Tonopah RMPs do not include analysis of the impacts of oil and gas leasing to wild horses and burros, or stipulations specific to those impacts. Refer to the Lease Notice – Wild Horse and Burro (#NV-B-05-A-LN) in Appendix B.

The primary indirect (potential future) impacts to wild horses and burros could include the influence to herd distribution and movement patterns throughout the HMA and disturbance to the forage or water resources.

Mining exploration activities are common throughout the Battle Mountain District, and oil and gas exploration activities would produce similar impacts to wild horses and burros. Impacts from exploration activities (drilling) could include displacement of horses or burros due to increased human activity. These impacts would likely be short term in nature and would consist of animals moving out of the area or changing movement patterns to avoid possible noise disturbance and human presence. The degree of disturbance would be proportional to the levels of exploration/development and increased activity in the area.

Wild horses or burros that commonly utilize a particular area that is subsequently developed for oil or gas production could be pressured to move from that portion of the HMA, thus changing their movement and use patterns. Any exploration or development that occurs near a water source such as a spring, creek or seep, or that causes a water source to be eliminated or contaminated, could have impacts to wild horse distribution and use patterns and affect the overall water availability in the area. The magnitude of this change in movement would depend on the location, duration and extent of any future exploration or development.

Increased traffic could increase risk of injury or death from vehicle collisions. Should parcels within the HMA be proposed for exploration or production, additional site- and project-specific NEPA analysis would identify BMPs to minimize or prevent vehicle related issues.

Nine higher elevation parcels in the Diamond Mountain range have slopes that exceed 45% with the majority of those in excess of 60%. These mountain locations are highly susceptible to erosion. Development or exploration in these areas could have impacts to site productivity and forage availability which could be long term. Many of these sites could be difficult to reclaim as shown by failed fire rehabilitation efforts of the past, and predominance of cheatgrass vegetation in many locations.

Should there be exploration implemented in the future as a result of the lease sale, localized and small scale vegetation disturbance or forage habitat fragmentation could occur due to seismic testing, road construction, overland travel and drill pad construction. According to the RDF scenario (Section 2.4.1 and 2.4.2), surface disturbance is likely to constitute 65-100 acres in the next 10 years across the entire Battle Mountain District; this acreage is minimal as compared to the areas offered for lease (approximately 195,732 acres), and the District HMA total of 3.6 million acres. Under the Proposed Action, the area of potential disturbance could include any of the proposed lease parcels. However, if exploration were to occur, or parcels were developed in the future, site-specific mitigation measures would be attached as COAs for each proposed activity, which would be analyzed in additional site-specific NEPA analysis, and would include involvement with the interested public.

Potential Mitigations

Mitigation measures and best management practices (BMPs) would need to be developed in the course of site-specific or project-specific NEPA analysis. However, the following general measures should be taken if a parcel is developed:

- Avoid or minimize blocking access to critical waters by wild horses and burros.
- Keep gates closed on highway rights-of-way to prevent wild horses and burros from entering major highways and colliding with motor vehicles.
- Gates not located on rights-of-way should be left as they are found, whether open or closed, unless there are instructions to close them.
- Posted speed limits (and reasonable speeds where no limits are posted) should be followed by motorists to avoid colliding with wild horses and burros crossing roads.
- Invasive weeds can reduce the amount of forage and water available to wild horses and burros if allowed to spread. Avoid spreading weeds by ensuring that equipment arrives at the project site cleaned of seeds, soil, and plant fragments. Treat any existing weeds within a project's

disturbance area throughout the life of the project and reclaim the site with an appropriate seed mix.

- Avoid developing parcels with slopes in excess of 45% to minimize erosion, which can diminish flow from water sources used by wild horses and burros.
- Should a water source utilized by wild horses become unavailable due to exploration or development, the authorized officer may require alternate water sources be developed or made available to wild horses, wildlife and livestock that rely in that area.

Partial Deferral Alternative

Under this alternative, approximately 104,668 acres are proposed for deferral due to sensitive wetlands, seeps and/or springs, floodplains, playas, steep slopes, or historical features. If deferred these approximately 104,668 acres would not be subject to the potential effects described for the Proposed Action. Of the approximately 47,780 acres of parcels identified within HMAs (Tables 6 – 9), approximately 23,626 acres (49%) would be deferred. Future exploration or development that could influence herd distribution and movement patterns would not occur in the deferred parcels. This would be especially evident in the Diamond HMA, where deferred parcels are within high elevation summer range having water sources. There would be less potential for impacts to the springs that constitute important water sources throughout the Diamond HMA, in three parcels in the Fish Creek HMA, and in parcel 50 of the Whistler Mountain HMA. The remaining 24,154 acres within HMAs that would be offered for lease sale under this alternative would be subject to the same potential effects as described for the Proposed Action.

Additional Resource Protection Alternative

As compared to the Partial Deferral Alternative, this alternative would not offer as much protection from future exploration or development that could influence herd distribution and movement patterns, because all parcels would be available for lease sale immediately. However, Timing Limitation (TL) stipulations would be placed on parcels having crucial mule deer and pronghorn seasonal habitats. This would result in reduced disturbance from November through April, providing some benefit to wild horses because that period of time overlaps with foaling season, which starts by about March 1 (burros do not have defined foaling seasons). Several parcels subject to the TL stipulations intersect HMAs: parcels 42, 43, 44, 45, 48, 49, 67, 90 and 91, Fish Creek HMA; parcels 50 and 51, Whistler Mountain HMA; parcel 87, slightly intersecting Diamond HMA.

Under this alternative, the new Water Resources CSU stipulation would be applied immediately to the same parcels as would be addressed by deferral and future NSO stipulations under the Partial Deferral Alternative. This would provide a similar degree of protection to the important water sources throughout the Diamond HMA, including those within high elevation summer range having water sources; in three parcels in the Fish Creek HMA; and in parcel 50 of the Whistler Mountain HMA. Keeping water sources available would prevent excessive concentration of wild horses and burros in small areas, which could occur under the Proposed Action and could lead to overuse of forage and water in those areas.

Under this alternative parcels with steep slopes that are susceptible to erosion would be available for lease sale, but with the Slopes >30% CSU stipulation effective immediately. This stipulation allows development of these parcels but within restrictive parameters designed to prevent impacts, and is

extended to all slopes greater than 30 percent, whereas the Partial Deferral alternative only addresses certain slopes greater than 40 percent. These measures are expected to be effective in preventing erosion (see Soils effects analysis above).

No Leasing Alternative

Under this alternative, no parcels would be offered for leasing in 2017 and the potential effects described above would occur on other leased parcels in the Battle Mountain District.

3.2.10 Rangeland Resources

Affected Environment

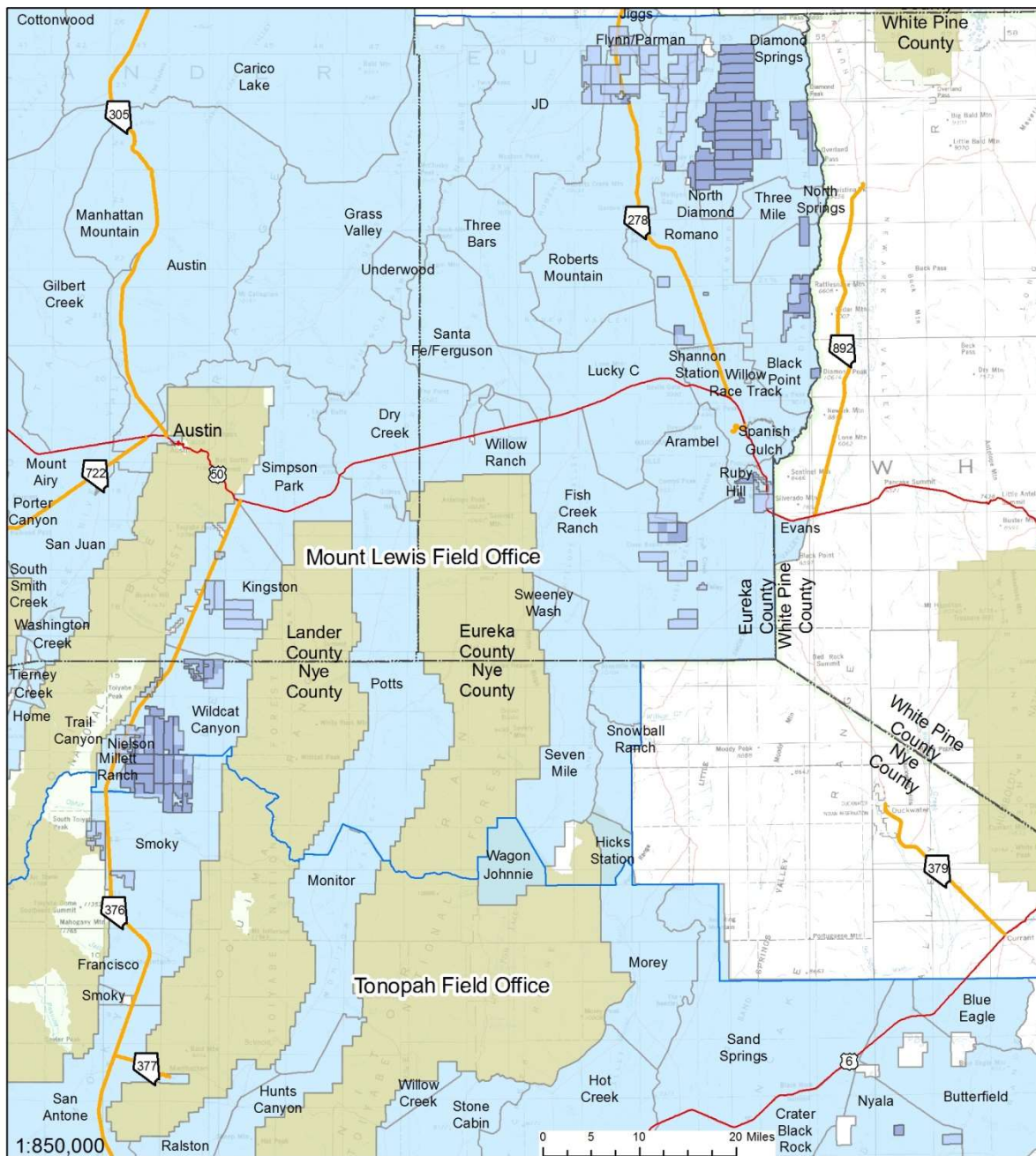
Livestock production is a major industry within the Battle Mountain District. The Range Program permits and manages public land grazing on 91 allotments for 88 permittees and approximately 366,946 Animal Unit Months (AUMs). An AUM is the amount of forage necessary for the sustenance of one cow or its equivalent for a period of one month. Twenty grazing allotments include all or portions of the parcels proposed for leasing. Most grazing allotments are comprised of both public and private lands; however, the majority of the allotments are dominated by public lands.

Grazing permits are issued to qualified individuals or entities, and specify livestock numbers, season of use, kind of livestock and number of AUMs allowed for use. Other terms and conditions may be added to grazing permits for the orderly management of the permit and/or the livestock within the allotment(s). Each allotment may have one or multiple permittees. Various range improvement projects are also located within these allotments and may include fences, cattle guards, troughs, wells, pipelines, seedings, and vegetation manipulation projects.

Table 10 shows the allotments within the Project Area, the public acres within the allotment, the number of acres of offered lease parcels within each allotment, the number of authorizations/permittees within each allotment, the kind of livestock authorized, and active and suspended AUMs. Figure 7 displays the allotments, all proposed lease parcels under the Proposed Action, and parcels recommended for deferral under the Partial Deferral Alternative.

Table 10. Grazing allotments with proposed lease parcels.

Allotment Name	Allotment Public Acres	Lease Parcel Acres	Number of Authorizations	Kind	AUMs	Suspended AUMs
Smoky	125,247	16,376	2	Cattle	5,593	226
Nyala	321,274	648	1	Cattle	13,225	6,742
Arambel	46,969	931	1	Sheep	2,554	1205
Black Point	59,804	8,944	1	Cattle / Sheep	6,619	2,307
Diamond Springs	72,271	24,578	1	Cattle	5,287	1,607
Fish Creek Ranch	289,292	16,834	3	Cattle	36,013	32,000
				Sheep	802	0
Flynn/Parman	27,834	11,626	1	Cattle	2,232	833
JD	140,240	9,156	1	Cattle	8,200	0
Kingston	78,810	10,529	2	Cattle	2,720	0
Lucky C	114,327	164	1	Cattle	3,942	888
Millett Ranch	798	0.05	1	Cattle	72	0
Nielson	493	493	1	Cattle	180	64
North Diamond	76,950	44,619	2	Cattle	6,428	2849
Roberts Mountain	163,671	14,379	1	Cattle / Sheep	18,220	8,596
Romano	75,785	3,062	1	Cattle	2,887	0
Ruby Hill	12,267	56	2	Sheep	1,011	0
				Cattle	275	0
Shannon Station	31,487	1,074	1	Cattle	3,211	691
Three Mile	27,335	570	1	Cattle	2,087	1,237
Trail Canyon	24,103	16,247	2	Cattle	1115	534
Wildcat Canyon	64,976	14,988	1	Cattle	2677	0



2017 BMDO Oil & Gas Parcel Map with Deferrals

LEGEND

- OG Lease Sale Parcels-June 2017
- Recommended Deferral under Partial Deferral Alternative
- County Boundary
- Mount Lewis Field Office
- Tonopah Field Office
- BMD Grazing Allotment
- Forest Service Allotments



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 Bureau of Land Management
 Tonopah Field Office
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Figure 7. Grazing allotments in Assessment Area with proposed lease parcels (Proposed Action and Additional Resource Protection Alternative); proposed deferrals (Partial Deferral Alternative).

Environmental Consequences

Proposed Action

It is reasonably foreseeable that oil and gas exploration and development would occur over the next 10 years within the Assessment Area, with 65-100 acres disturbed by activities associated with oil and gas exploration and production including exploration wells, production infrastructures, road construction, and gravel pit expansion (see RFD scenario, Section 2.4.1). These actions would remove available forage for livestock on 65-100 acres, potentially decreasing the AUMs in the allotment(s). These impacts to range are expected to be comparatively minor when compared to the acreage offered for lease, and would be temporary in nature, because the majority of the disturbance (roads and pads) would be reclaimed. Impacts to rangeland resources from these activities would be analyzed under an additional project-specific EA when an action is proposed and specifics are known, such as location, well depth, water consumption needs, and area of disturbance. Through this process, site-specific mitigation measures and BMPs would be attached as COAs for each proposed activity. Any potential impacts to existing range improvements would also be identified and mitigated via the project-specific analysis for any future exploration or development project on leased parcels.

Partial Deferral Alternative

Under this alternative, approximately 104,668 acres are proposed for deferral due to sensitive wetlands, seeps and/or springs, floodplains, playas, steep slopes, or historical features. If deferred these approximately 104,668 acres would not be subject to the potential effects described for the Proposed Action, involving temporary disturbance to 65-100 acres of rangeland resources. The remaining 91,064 acres that would be offered for lease sale under this alternative would be subject to the same potential effects as described for the Proposed Action.

Additional Resource Protection Alternative

Under this alternative, effects to rangeland resources would be essentially similar to those described for the Proposed Action.

No Leasing Alternative

Under this alternative, no parcels would be offered for leasing in 2017 and the potential effects described above would occur on other leased parcels in the Battle Mountain District.

3.2.11 Cultural Resources

Affected Environment

Cultural resources include prehistoric and historic-period resources such as buildings, sites, structures, objects, and districts. Prehistoric cultural resources are associated with the human occupation and use of Nevada before long-term European occupation. Such resources include but are not limited to Native American camp sites, rock art, and trails—some dating to over 12,000 years old. Historic-period cultural resources include both the archaeological- and built-environment, such as buildings and structures, archaeological sites, and historic districts.

Parcels proposed for the 2017 lease sale are located primarily in the Diamond, Garden, and Big Smoky Valleys (Figures 2 and 4). Other parcels are located in the Diamond, Sulphur Springs, and Fish Creek Ranges (Figures 2 and 3). One smaller parcel is positioned in Railroad Valley (Figure 5), along with the reinstatement parcel. Although limited cultural resource surveys have been completed within the proposed parcels, (less than 5% of the total parcel acreage has been surveyed at the Class III level) all are likely to contain areas of moderate and/or high sensitivity for cultural resources.

A segment of the Pony Express Trail traverses Parcel NV-17-06-105. As the trail is on land managed by the Bureau of Land Management, Mount Lewis Field Office, it is classified as an archaeological site. In addition, the Pony Express Trail has been designated a National Historic Trail (NHT) which is administered by the National Park Service, National Trails System (see Section 3.2.13, Recreation).

As an archaeological site, the Pony Express/Overland Trail (Site CrNV-62-482;26EU762/763) falls under the National Historic Preservation Act (Public Law 89-665; 54 U.S.C. 300101 et seq.), specifically Section 106 (see 36 CFR 800, as amended). The section of the route which passes through the proposed leasing parcel was first studied between 1976 and 1982 and has been continuously recorded and documented since. The most recent discussion of the segment's archaeological significance indicates it is eligible to the National Register of Historic Places under Criterion A, as it retains historical integrity of location, setting, feeling, and association to embody its own significance as a part of this important communication system.

Environmental Consequences

Proposed Action

The act of selling oil and gas leases in itself does not have the potential to impact cultural resources, as lease sales do not authorize exploration, development, or production that could directly or indirectly affect the environment; however, once issued, a lease bestows upon its owner the "right to use so much of the lease lands as is necessary to explore for, drill for, mine, extract, remove and dispose of the leased resource in the leasehold" (43 CFR§ 3101.1-2) subject to specific nondiscretionary statutes and lease stipulations (Appendix B).

Conservatively, based on historic information and anticipated activity, over the next ten years, approximately 65-100 acres of surface disturbance associated with potential oil and gas exploration and production activities could be expected to occur in the Battle Mountain district. Cultural resources located within the proposed parcels would be subject to direct and indirect effects from oil and gas exploration and development activities (e.g. ground disturbance and facilities construction). As such, identification and evaluation of these resources on a case-by-case basis for compliance with Section 106 of the National Historic Preservation Act (NHPA) would be required prior to project implementation or ground disturbing activities.

Lease Notice NV-B-07-A-LN would be attached to all leases within Battle Mountain District to help minimize any potential effects on cultural resources located within the proposed parcels. This Lease Notice informs the lessee that their lease may 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. It also informs the lessee that 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 also 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.

Under the Proposed Action, cultural resources located within the proposed parcels would be identified and evaluated on a case-by-case basis, and compliance with Section 106 of the NHPA would be required prior to project implementation or ground disturbing activities. Section 106 compliance activities would include the identification of cultural resources within parcels, evaluation of cultural resources for their eligibility for listing in the NRHP, and resolution of any adverse effects to historic properties (i.e., resources eligible for or listed in the NRHP). Resolution of adverse effects to historic properties, including mitigation, would be conducted in accordance with all applicable authorizes, including the State Protocol Agreement between the Bureau of Land Management and the Nevada State Historic Preservation Officer for Implementing the National Historic Preservation Act (Protocol; revised December 2014). The Protocol also includes certain actions exempt from inventory, such as conducting minerals exploration that conforms to casual use in accordance with 43 CFR §3802.1-2 and 43 CFR §3809.5(1).

Based on the above requirements, it is unlikely that indirect effects to cultural resources from leasing these 106 parcels would be substantial.

An exception to the discussion above is the Pony Express/Overland Trail (Site CrNV-62-482;26EU762/763). Oil and gas development near the trail could result in an adverse effect to the route segment, and the trail as a whole. 36 CFR 800.5(a)(1) defines an adverse effect as any Federal action which “may alter directly or indirectly, any of the characteristics of a historic property that qualify it for inclusion on the National Register [of Historic Places] in a manner that would diminish the integrity of the property’s location, design, setting, materials, workmanship, feeling, or association.” Oil and gas development within the physical footprint of the site—or within its viewshed or auditory sphere—has the potential to adversely impact the site’s integrity of setting, setting, and feeling. Existing protections for the resource (e.g. the BLM’s discretion to move proposed oil and gas development up to 200 meters; recommendation of design changes, etc.) will not be sufficient to avoid the abovementioned effects.

Potential Mitigations: The most appropriate mitigations for such potential loss of integrity would incorporate administrative and design controls. Administrative controls would constrain project development, operation, and maintenance to periods when effects to the Trail would be less when compared to other times. For example, construction and maintenance could only occur when the Trail has limited visitors, etc. The project could potentially be designed so that it was less obtrusive to visitors on the Trail and less damaging to its historical integrity. Design controls would include a stipulation that any development and/or reclamation performed on the Trail would meet the guidelines set forth in the Secretary of the Interior’s Standards for Rehabilitation (see 36 CFR 67.7[b][1-10]). The Standards state that:

- (1) A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.
- (2) The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.
- (3) Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.
- (4) Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.
- (5) Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a historic property shall be preserved.
- (6) Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.
- (7) Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.
- (8) Significant archeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.
- (9) New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.
- (10) New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

In order to result in No Adverse Effect, the development would have to conform to the guidelines above (36 CFR 67.7[b][1-10]).

Additionally, if the development was positioned well away from the Trail, direct effects could be avoided and indirect effects (e.g. visual, auditory, and vibrational) could be lessened. Strategic coloration of the wellhead and associated infrastructure could further lessen the visual effects. Construction of bulwarks or similar structures could reduce the auditory and vibrational indirect effects to the Trail. In the absence of any other appropriate design or administrative mitigation the BLM would be responsible for 1)

development of a Historic Property Treatment Plan (HPTP); 2) full documentation of the Trail in accordance with the HPTP and all Nevada BLM cultural resource standards; 3) production of a cultural resource mitigation report; and, 4) some type of public involvement (e.g. brochures and publications, websites, or museum exhibits).

Residual Impacts: Even with the best design and administrative controls, it is feasible that the Trail will still suffer some negative residual impacts to its historical integrity. Such impacts would be cumulative, holistic, and irrevocable. Full loss of historical integrity resulting from direct, indirect, or cumulative effects—even residual impacts—could result in Nevada’s section of the Pony Express/Overland Trail being delisted from the National Register of Historic Places.

Partial Deferral Alternative

Under this alternative, approximately 104,668 acres are proposed for deferral. Most of the proposed deferrals are due to sensitive wetlands, seeps and/or springs, floodplains, playas, and steep slopes. If deferred these approximately 104,668 acres would not be subject to the potential effects described for the Proposed Action, involving 65-100 acres of surface disturbance.

Deferred parcels would also include 160 acres of Parcel NV-17-06-105 that are proposed for deferral specifically because that part of the parcel is traversed by the Pony Express/Overland Trail. Under this alternative, this portion of the parcel would be withheld from lease sale pending development of a No Surface Occupancy (NSO) stipulation in the updated RMP. The proposed NSO deferral area would serve to avoid effects to the Pony Express Trail segment as it passes through the proposed lease parcel. Under a future NSO stipulation, the area beneath the parcel would still be available for development; however, ground-disturbing activities would have to be located away from the trail itself. With no surface occupancy directly on the historic route, and development activities moved out of the trail’s viewshed, this Pony Express Trail segment’s historical and recreational value would be preserved.

The remaining 91,064 acres that would be offered for lease sale under this alternative would be subject to the same overall potential effects—and the required mitigation measures—as described for the Proposed Action.

Additional Resource Protection Alternative

Under this alternative, parcels recommended for deferrals under the Partial Deferral Alternative would be offered for lease, subject to additional stipulations or lease notice. The lease notice NV-B-07-E-LN would be applied to Parcel 105 which contains a National Scenic and Historic Trail segment. The lease notice states that the BLM will not approve any ground-disturbing activities that may affect any such properties or resources until it completes its obligation to consult with the State Historic Preservation Office (SHPO), the Trail Administering Agency (National Park Service) and interested public and organizations 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.

This lease notice offers less protection to the resource’s historical and cultural values than a deferral would. Under the Partial Deferral Alternative, 160 acres around the Trail would be deferred pending adding an applicable NSO stipulation to a future updated RMP. The NSO stipulation would prevent any

adverse direct or indirect effect to the Trail's historical and cultural values by moving ground-disturbing activities away from the Trail. Under the Additional Resource Protection Alternative, those 160 acres would be open for leasing and subject to the above-referenced lease notice. Lease notices serve to alert prospective lessees and future decision-makers to existing laws and policies that would apply to the parcel. Effects would be the same as the Proposed Action except that the lease notice would help ensure that the Trail and the laws and policies that apply to it are recognized at the time of any future APD or other proposal.

If the Parcel were leased and an APD or other proposal submitted to the BLM, the plan would have to be analyzed to ensure that it did not result in any adverse effects that could not be successfully avoided or mitigated. If the effects could not be avoided or mitigated through the administrative or design controls, they would have to be minimized a best as possible—resulting in an unmitigated adverse effect to a resource determined eligible for the National Register of Historic Places—and/or development disapproved. Such adverse effects could result in negative residual impacts to the Trail's historical integrity that would be cumulative, holistic, and irrevocable. Full loss of historical integrity resulting from direct, indirect, or cumulative effects—even residual impacts—could result in this resource losing its eligibility to the National Register of Historic Places.

No Leasing Alternative

Under this alternative, no parcels would be offered for leasing in 2017 and the impacts described above would occur on other leased parcels in the Battle Mountain District.

3.2.12 Native American Cultural Concerns

Affected Environment

The Assessment Area lies within the traditional territory of the Western Shoshone Tribes. Sites and resources considered sacred or necessary to the continuation of tribal traditions include, but are not limited to: prehistoric and historic village sites, pine nut gathering locations, sites of ceremony and prayer, archaeological sites, burial locations, “rock art” sites, medicinal/edible plant gathering locations, areas associated with creation stories, or any other tribally designated Traditional Cultural Property.

Tribal ethnographic resources are associated with the cultural practices, beliefs, and traditional history of a community. In general, ethnographic resources include places in oral histories or traditional places, such as particular rock formations, the geothermal water sources, or a rock cairn; large areas, such as landscapes and viewscapes; sacred sites and places used for religious practices; social or traditional gathering areas, such as racing grounds; natural resources, such as plant materials or clay deposits used for arts, crafts, or ceremonies; and places and natural resources traditionally used for non-ceremonial uses, such as trails or camping locations. Future Native American Consultations in the area may reveal such sites, activities, or resources.

The NEPA process does not require a separate analysis of impacts to religion, spirituality, or sacredness. As a result, references to such beliefs or practices convey only the terminology used by participants involved in current and historic ethnographic studies and tribal consultation and coordination. This terminology does not reflect any BLM evaluation, conclusion, or determination that something is or is not

religious, sacred, or spiritual in nature, but conveys only the information that has been gathered through tribal consultation and coordination and ethnographic study.

Tribal Consultation and Information Sharing

The BLM Battle Mountain District, Mount Lewis and Tonopah Field Offices have an ongoing invitation for consultation and information sharing with the tribes. Consultation and communication with these tribal/band governments have included letters, phone calls, e-mails, and visits with individual tribal/band Environmental Coordinators or other representatives. Consultation and information sharing will continue throughout the life of the project.

The majority of lands within the proposed action area have not been analyzed for ethnographic resources or Native American cultural concerns. The BLM contacted the Duckwater Shoshone Tribe, Yomba Shoshone Tribe, the Te-Moak Shoshone Tribe, and the Descendants of the Big Smoky Valley to identify areas of concern, mitigation measures, operating procedures or alternatives that may eliminate or reduce impacts to any existing tribal resources.

During coordination meetings with the Duckwater Tribe and representatives of the Descendants of the Big Smoky Valley prior to the previous (June 2016) Lease Sale, they identified the whole valley as a significant area regarding the creation of the Shoshone People. Several parcels were identified and deferred from the 2016 lease sale for one year while BLM worked with the Tribes to identify specific areas of concern. For the 2017 lease sale, the Duckwater Shoshone Tribe proposed long-term deferral of the same parcels. Based on further information provided by the Tribes, their main concerns relate to culturally sensitive sites at specific, discrete, but currently-unknown locations within the general area of those parcels. The Tribe also proposed deferrals based on overlap with their grazing allotments.

Environmental Consequences

Proposed Action

Although the act of issuing oil and gas leases does not directly authorize exploration, development, or production, or any other related ground-disturbing activities, the potential exists for future exploration or development on the leased parcels to impact Native American sites of a spiritual, cultural, or traditional nature. Effects to the types of resource uses by traditional activities and current religious practices can be difficult to effectively mitigate; however, impacts can be minimized and/or mitigated when affected Tribes provide input and actively and fully participate in the decision making process.

Lease Notice NV-B-07-A-LN (Appendix B) would be attached to all parcels at the time of sale, stating that BLM will not approve any ground-disturbing activities until it conducts its tribal consultation obligations; and may require modification to exploration or development proposals or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized, or mitigated. If projects are proposed on any leased parcel in the future, each proposed activity would be analyzed under its own site-specific NEPA analysis. At that time the BLM would consult with the tribes and site-specific mitigation measures and BMPs would be attached as COAs. This would include avoiding sites of cultural importance in the previously-deferred parcels in Big Smoky Valley when their specific locations become known. Given the importance of the entire valley, the Duckwater tribe, the Yomba tribe and the Descendants of the Big Smoky Valley have requested that they be involved with the

development of any of the parcels from the very beginning of the development process. Many of the parcels may require extensive mitigation and very specific COAs (i.e placement of facilities and wells) to avoid adverse effects to these locations. Concerns about effects to grazing allotments would also be addressed at the time of any proposed exploration or development (see Rangeland Resources, Section 3.2.10).

Partial Deferral Alternative

Under this alternative, approximately 104,668 acres are proposed for deferral due to sensitive wetlands, seeps and/or springs, floodplains, playas, steep slopes, or historical features. If deferred these approximately 104,668 acres would not be subject to the potential effects described for the Proposed Action.

The parcels that would be deferred under this alternative include parts of 3 of the 8 parcels in Big Smoky Valley that received a one-year deferral from the 2016 lease sale due to Native American concerns. Under this alternative, the parcels would be deferred pending resolution of resource issues related to wetlands, floodplains and playas via new stipulations in an updated RMP. This alternative would provide additional protection to areas with Native American concerns to the extent that they coincide with the deferred parts of the parcels.

The remaining 91,064 acres that would be offered for lease sale under this alternative would be subject to the same potential effects as described for the Proposed Action.

Additional Resource Protection Alternative

Under this alternative, no parcels would be deferred; all would be available for lease sale immediately. The same Lease Notice addressing Native American concerns would be applied to all parcels regardless of alternative. Effects to Native American concerns would be the same as those described for the Proposed Action.

No Leasing Alternative

Under this alternative, no parcels would be offered for leasing in 2017 and the potential effects described above would occur on other leased parcels in the Battle Mountain District.

3.2.13 Recreation

Affected Environment

The proposed lease parcels are not located in any designated recreation areas. The proposed lease parcels are all within dispersed recreation areas subject to public use. Dispersed recreation areas are utilized by many different members of the public. Dispersed recreation activities include off-highway vehicle (OHV) use, driving for pleasure, camping, mountain biking, sightseeing, rock collecting, photography, hunting, trail running, hiking and bird watching.

The section of the Pony Express Trail running through the proposed Parcel 105, discussed in terms of its historical values in Section 3.2.11, Cultural Resources, is also part of the Pony Express National Historic Trail (see P.L. 90-543, as amended, and 16 USC 1244 §5[a][19]). One of the criteria to qualify as a

National Historic Trail is “significant potential for public recreational use or historical interest based on historic interpretation and appreciation” 16 USC 1243[b][11][c]). Additionally, according to 16 USC 1246(c) “[r]easonable efforts shall be made to provide sufficient access opportunities to such trails and, to the extent practicable, efforts shall be made to avoid activities incompatible with the purposes for which such trails were established.” Recreational uses of the trail may include running, walking, hiking, backpacking, bird watching or horseback riding, typical of a primitive/semi primitive non-motorized setting.

Potential Mitigation and Residual Impacts: See Section 3.2.11, Cultural Resources. The potential mitigation measures to protect Pony Express Trail historical values would also provide some protection to recreational values, with similar residual impacts.

Environmental Consequences

Proposed Action

No direct impacts to recreation on public lands would occur as a result of the oil and gas lease sale. However, there are potential indirect (future) impacts that could occur from associated leasing activities, such as exploration and development. The following are potential environmental impacts on recreation, considering the RFD scenario.

Oil and gas development near the Pony Express National Historic Trail has the potential to both 1) exclude the public from use of the Trail; and 2) represent an incompatible use, counter to the management direction provided by 16 USC 1246(c) as quoted above. Furthermore, oil and gas development within the Trail itself—or within its viewshed—has the potential to adversely impact the Trail’s setting (also see Section 3.2.14, Visual Resources). Existing protections for the resource (e.g. the BLM’s discretion to move proposed oil and gas development up to 200 meters, recommendation of design and aesthetic changes, etc.) will not be sufficient to avoid the abovementioned effects.

The following discussion applies to the remainder of the proposed lease parcels:

During the exploration phase, survey and drilling crews are likely to use available access roads and trails that are also used for dispersed recreation and access to recreation opportunities. The survey activities conducted during the exploration phase are likely to minimally impact recreation, if at all, due to the short duration, small crew size and temporary nature of the surveys and well drilling, along with the dispersed nature of recreation activities in these areas.

Potential exploration activities may include construction of access roads and well pads. Increased truck traffic during this phase could affect recreation due to increased noise and dust levels and could cause temporary delays or closures on access roads. Construction sites are likely to have limited access to the public which could, in turn, slightly decrease access to the area for recreation and possibly displace recreational users.

The production stage may include operation and maintenance of the constructed facilities. These activities require a small number of employees who would utilize access roads in the area but are not likely to limit the recreational use of these roads. Oil and gas production facilities are likely to have limited access to the public which could, in turn, slightly decrease access to the area for recreation and possibly displace

recreational users. However, improved access to the area for recreation may be available because of the maintained access road to the production facility.

If parcels were developed in the future, mitigation measures and BMPs would be developed and attached as COAs for each proposed activity, through additional project- and site-specific NEPA analysis.

Partial Deferral Alternative

Under this alternative, approximately 104,668 acres are proposed for deferral, mainly due to sensitive wetlands, seeps and/or springs, floodplains, playas and steep slopes. If deferred these approximately 104,668 acres would not be subject to the potential effects described for the Proposed Action.

Deferred parcels would also include 160 acres of Parcel NV-17-06-105 that are proposed for deferral specifically because that part of the parcel is traversed by the Pony Express National Historic Trail. Under this alternative, this portion of the parcel would be withheld from lease sale pending development of a No Surface Occupancy (NSO) stipulation in the updated RMP. The proposed NSO deferral area would serve to avoid effects to the Pony Express Trail segment as it passes through the proposed lease parcel. Under a future NSO stipulation, the area beneath the parcel would still be available for development; however, ground-disturbing activities would have to be located away from the trail itself. With no surface occupancy directly on the historic route, and development activities moved out of the trail's viewshed, this Pony Express Trail segment's historical and recreational value would be preserved.

The remaining 91,064 acres that would be offered for lease sale under this alternative would be subject to the same potential effects as described for the Proposed Action.

Additional Resource Protection Alternative

Under this alternative, parcels recommended for deferrals under the Partial Deferral Alternative would be offered for lease, subject to an additional lease notice. The lease notice, NV-B-07-E-LN, would be attached to Parcel 105 which contains a National Scenic and Historic Trail. The lease notice states that the BLM will not approve any ground-disturbing activities that may affect any such properties or resources until it completes its obligation to consult with the State Historic Preservation Office (SHPO), the Trail Administering Agency (National Park Service) and interested public and organizations 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.

This lease notice offers less protection to the resource's recreational value than a deferral would. Under the Partial Deferral Alternative, 160 acres around the Trail would be deferred pending adding an applicable NSO stipulation to a future updated RMP, which would move ground-disturbing activity away from the Trail; doing so would prevent any development from 1) excluding the public from use of the Trail; and 2) representing an incompatible use per 16 USC 1246(c). Under the New Stipulation, Added Habitat Alternative, those 160 acres would be open for leasing and subject to the above-referenced lease notice. Lease notices serve to alert prospective lessees and future decision-makers to existing laws and policies that would apply to the parcel. Effects would be the same as the Proposed Action except that the lease notice would help ensure that the Trail and the laws and policies that apply to it are recognized at the time of any future APD or other proposal.

As with the Proposed Action, any APD or other proposal resulting from the sale of Parcel 105 would have to be carefully analyzed to avoid or mitigate any activity that is likely to result in adverse effects to the resource's recreational value. Such adverse effects include increased noise and dust levels; limited access to the Trail by the public; and displacement of the public from the Trail. However, as with the Proposed Action, the Added Habitat Alternative has potential to increase recreation opportunities for the public by improving access to the area.

The potential mitigation measures to protect Pony Express Trail historical values (3.2.11, Cultural Resources) would also provide some protection to recreational values, with similar residual impacts.

No Leasing Alternative

Under this alternative, no parcels would be offered for leasing in 2017 and the potential effects described above would occur on other leased parcels in the Battle Mountain District.

3.2.14 Visual Resources

Affected Environment

BLM Manual Series 8400 outlines the visual resource management (VRM) program. The BLM assigns VRM classes to public lands through the land use planning process, with different management direction for each class. Lands are assigned a class ranging from one to four, with VRM Class I maintaining the highest visual values and VRM Class IV maintaining the lowest values. Attempts are made to mitigate visual contrasts from surface-disturbing activities regardless of the VRM class assigned.

None of the Assessment Area falls within VRM Class I. This class provides primarily for natural ecological changes; however, it does not preclude limited management activity. Any contrast created within the characteristic environment must not attract attention. It is applied to wilderness areas, some natural areas, wild portions of designated Wild and Scenic Rivers, and other similar situations where management activities are to be restricted.

Proposed lease parcels are entirely or substantially within the following VRM classes and corresponding management direction:

Class II areas, 3 parcels, 2631 acres (1.34% of Assessment Area)

Changes in any of the basic elements (form, line, color, texture) caused by a management activity should not be evident in the characteristic landscape. A contrast may be seen but should not attract attention.

Class III areas, 34 parcels, 34,080 acres (17.41% of Assessment Area)

Contrasts to the basic elements (form, line, color, texture) caused by a management activity may be evident and begin to attract attention in the characteristic landscape. However, the changes should remain subordinate to the existing characteristic landscape.

Class IV areas, 69 parcels, 159,021 acres (81.24% of Assessment Area)

Contrasts may attract attention and be a dominant feature of the landscape in terms of scale; however, the change should repeat the basic elements (form, line, color, texture) inherent in the characteristic landscape.

In the BLM Ely District, adjacent to the Battle Mountain District, the Pony Express National Historical Trail is designated as VRM II. In the Battle Mountain District the area falls within Class IV designation, although projects with the potential to affect visual values associated with the trail have been held to a higher standard.

When a project is proposed, effects to visual resources, and measures to minimize them, are considered as part of the additional project- and site-specific environmental analysis. Effects are assessed in terms of how conspicuous they would be from key observation points, such as roads or scenic overlooks.

Structures in the foreground distance zone (0-½ mile) often create a contrast that exceeds the VRM class, even when designed to harmonize and blend with the characteristic landscape. Approval by the Area Manager is required on a case-by-case basis to determine whether the structure(s) meet the acceptable VRM class standards and, if not, whether they add acceptable visual variety to the landscape.

Dark skies are also taken into consideration as a visual resource. Central Nevada, including the Assessment Area, generally offers outstanding night sky viewing opportunities with frequent clear weather and many areas of little or no light pollution.

Environmental Consequences

Proposed Action

No direct impacts to visual resources on public lands would occur as a result of the oil and gas lease sale. However, there are potential indirect (future) impacts that could occur from associated leasing activities, such as exploration and development. These indirect impacts may include, but are not limited to, contrast of line, shape, color, or texture due to the emplacement of roads, drill pads, drill rigs, tank batteries, temporary and long-term facilities and pump jacks; and impacts of nighttime lighting to dark skies.

The purchase of a parcel does not guarantee that a parcel will be developed for oil and gas resources in the future. Based on the RFD, oil and gas exploration or production activities are expected to disturb a total of 65-100 acres over a 10 year period. The majority of Nevada's leases expire without any development ever occurring on them. However, if parcels were developed in the future, site-specific visual resource mitigation measures and BMPs would be developed and attached as COAs for each proposed activity, which would be developed through additional project- and site-specific NEPA analysis.

Potential methods to reduce impacts to visual resources on public lands include, but are not limited to, the following measures:

- designing lighting to reduce the impacts to night skies
- screening any stationary lights and light plants
- directing lighting onto the pertinent site only and away from adjacent areas not in use, with safety and proper lighting of the active work areas being the primary goal
- hooding and shielding lighting fixtures as appropriate
- using topographic features to visually screen facilities

- locating drill sites where they will be least conspicuous (BLM has the discretion to move proposed drill site locations up to 200 meters within the lease boundary)
- reducing the size or changing the configuration of drill pads
- using low profile tanks
- matching colors of facilities and equipment to blend in with the surroundings
- planning road alignment to minimize visual contrast

At the conclusion of activities related to oil and gas development, reclamation of the drill site would be required. Potential reclamation may include, but is not limited to, re-contouring drill pads; reclaiming roads; re-seeding drill sites and roads; and removing equipment and facilities related to oil and gas development.

Using these outlined mitigation and reclamation methods, as well as any others identified via NEPA analysis at the APD stage, generally has the potential to minimize impacts to visual resources on public lands to the greatest extent practicable.

Impacts to the viewshed/setting of the Pony Express National Historical Trail segment are of particular concern, as discussed under Section 3.2.13, Recreation, as oil and gas development within the Trail's viewshed has the potential to adversely impact the Trail's setting, counter to the management direction provided by 16 USC 1246(c).

Partial Deferral Alternative

Under this alternative, approximately 104,668 acres are proposed for deferral due to sensitive wetlands, seeps and/or springs, floodplains, playas, steep slopes, and a segment of the Pony Express National Historical Trail. These approximately 104,668 acres would not be subject to the potential effects described for the Proposed Action.

This alternative would reduce the potential for visual impacts to areas managed for higher visual values, because a disproportionate number of parcels proposed for deferral fall entirely or largely into VRM Class II or III. The parcels proposed for deferral include all or substantial parts of 23 of the 34 parcels in VRM Class III areas, and two of the three parcels in VRM Class II areas.

Deferred parcels would include 160 acres of Parcel NV-17-06-105 that are proposed for deferral specifically because that part of the parcel is traversed by the Pony Express National Historic Trail. Under this alternative, this portion of the parcel would be withheld from lease sale pending development of a No Surface Occupancy (NSO) stipulation in the updated RMP. BLM would also propose to include in the updated RMP a VRM Class II designation for the trail throughout the Battle Mountain District.

Under a future NSO stipulation, the area beneath the parcel would still be available for development; however, ground-disturbing activities would have to be located away from the trail itself. With no surface occupancy directly on the historic route, and development activities moved out of the trail's viewshed, this Pony Express Trail segment's historical, recreational, and visual values would be protected. The VRM Class II designation would also acknowledge and protect the trail's visual values.

The remaining 91,064 acres that would be offered for lease sale under this alternative would be subject to the same potential effects as described for the Proposed Action.

Additional Resource Protection Alternative

Potential visual impacts under this alternative are similar to those of the Proposed Action. As with the Proposed Action, the Additional Resource Protection Alternative has the potential to adversely impact the Pony Express Trail's VRM characteristics, as it would allow leasing of the area directly surrounding the Trail. Any APD or other proposal resulting from the sale of Parcel 105 would have to be carefully analyzed to avoid or mitigate any activity that is likely to result in adverse effects to the resource's visual values.

No Leasing Alternative

Under this alternative, no parcels would be offered for leasing in 2017 and the potential effects described above would occur on other leased parcels in the Battle Mountain District.

3.2.15 Geology and Minerals

Affected Environment

This section discusses other extractive mineral uses that may exist in the Assessment Area and could be affected by oil and gas exploration and development activities, with a brief overview of regional geology as background.

The Basin and Range province is comprised of north-south trending mountain ranges separated by broad valleys, which cover most of Nevada. This unique feature was 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 displacement resulted in tens of thousands of feet of separation and crustal thinning bringing magma heat sources close to the surface, resulting in volcanic activity (lava flows or cinder cones), superheated fluid (geothermal), and maturation of hydrocarbon sources (oil and gas).

The geologic history of central and southern Nevada, including the Assessment Area, is very complex and includes two major cycles of sedimentation (western and eastern facies sources), episodic thrust faulting, mountain-building, and associated intrusive and igneous activity. More recent geologic history includes a period of crustal extension that was accompanied by bimodal (rhyolite-basalt) volcanism, large volume caldera volcanism, and basin and range block-faulting resulting in high-levels of shallow crustal heat flow. The regional and local geologic setting has been instrumental in the location of and potential for numerous economic metallic mineral deposits in the Assessment Area, as well as development of economic geothermal resources.

Oil and gas parcels on public lands have been available within Battle Mountain District for several decades. The main producing fields are located within Railroad Valley; however, exploration for oil and gas could be expected in Diamond Valley, Garden Valley, Big Smoky Valley, Ione Valley, Fish Creek Valley, Antelope Valley, and Big Sand Springs Valley.

Nevada is a seismically active state that frequently receives numerous earthquakes each year. However, most are small in size 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

Locatable minerals historically or currently mined within the Assessment Area include metallic minerals (i.e., gold, silver copper, mercury, zinc, molybdenum, manganese, uranium, and tungsten) and industrial minerals (i.e., limestone, barite, gypsum, diatomaceous earth, sulfur, and fluorspar). 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 Material Sale

In addition to locatable minerals, common minerals are sold through mineral material sale. This encompasses petrified wood, 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 include sand, gravel, and rock quarries located along State, County, and BLM managed roads. These types of saleable minerals are distributed throughout the Battle Mountain District and overlap with oil and gas lease parcels should be expected.

Leasable Minerals

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 the following: coal, sodium, sulfur, potassium and phosphate (and under certain conditions, sand, gravel and locatable minerals). Fluid minerals include oil, gas, and geothermal resources.

Oil and Gas

Oil and gas fields in the Battle Mountain District occur in Railroad Valley and Pine Valley, in central Nevada. Oil and gas in Railroad Valley occurs 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 gas is trapped in the fractured, Oligocene age volcanic rocks and is believed to be sourced from deeper Cretaceous and early Tertiary marine sediments. Natural gas is not produced in commercial quantities in Nevada. Pine Valley oil production comes primarily from Oligocene and Miocene sedimentary and volcanoclastic sedimentary rocks, but rocks as old as the Devonian Telegraph Canyon Formation host oil in the vicinity of the Assessment Area.

Each oil and gas program varies, but generally 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.

A total of 1248 leases totaling 2.56 million acres have been authorized in Battle Mountain District since 1990. Since 1907, roughly 770 oil and gas wells have been drilled in the State of Nevada. Total oil production from 1954 to 2015 is 52.8 million barrels of oil. Oil production in the past five years (2011-2015) averaged 341,895 barrels of oil per year (source: Nevada Division of Minerals).

Shale Oil

The potential for production of petroleum products from shale oil within the Assessment Area is low in the short-term and probably low to moderate in the long-term. Shale oil contains significant crude oil and may be used as a source of petroleum, which Noble Energy is currently exploring in the northeastern part of Nevada. 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 (Anna et al. 2007). The Chainman, Vinini, Woodruff, and Sheep Pass Formations all occur within the Assessment Area. The Sheep Pass Formation hosts some oil in the Railroad Valley area. The Elko Formation may occur within the Battle Mountain District in the lower stratigraphy of Pine Valley, but the bulk of the Elko Formation is northeast of the District.

Geothermal

All land within the Battle Mountain District is open to geothermal leasing and development with exception of specific closures such as Wilderness Areas, Wilderness Study Areas, community watersheds, critical wildlife habitat areas, and military reservations. The Mount Lewis Field Office prepared a “Programmatic Environmental Assessment Geothermal Leasing and Exploration - Shoshone-Eureka Assessment Area” in 2002. The Tonopah Field Office implemented the “Proposed Tonopah RMP and Final Environmental Impact Statement” (1994) and a programmatic Environmental Assessment for geothermal leasing to expedite processing geothermal lease applications. These were supplanted by the Geothermal Programmatic Environmental Impact Statement for Geothermal Leasing in the Western U.S., approved on December 17, 2008 to expedite processing geothermal lease applications.

Approximately 20 percent of the land within the Battle Mountain District is potentially valuable for geothermal resources, located mainly in Esmeralda and Lander counties.

Environmental Consequences

Proposed Action

There would be no direct impact to mineral exploitation, since oil and gas leasing does not authorize exploration and development of oil and gas. The potential that oil and gas interests may overlap with other solid or fluid mineral exploration exists. The majority of acres that may be used for oil and gas exploration and production are usually reclaimed within 5 years and 25 years, respectively. In most instances, oil and gas exploration is a short-term endeavor (2-10 months) and hence would not appreciably affect mineral exploration and development. Agreements between oil and gas and mineral operators could help to mitigate those acres that would be used for oil and gas production on a more long-term basis. Any potential impacts to existing mineral estate would be identified and mitigated via the project-specific analysis for any future exploration or development project on leased parcels.

Oil and gas exploration and development activities could require up to 2.5 acres in gravel pit expansion. This small acreage would not greatly increase the size or number of gravel pits, nor would it burden the communities that use gravel.

There is one geothermal lease that partially overlaps one proposed oil and gas lease sale parcel. These potential impacts could be mitigated through negotiations between operators.

If any of these parcels are developed, design features, project- and site-specific mitigation measures, and BMPs would be attached as COAs for each proposed activity, which would be developed through additional site-specific NEPA analysis.

Partial Deferral Alternative

Under this alternative, approximately 104,668 acres are proposed for deferral due to sensitive wetlands, floodplains, playas, steep slopes, or historical features. Oil and gas are non-renewable resources and once oil and gas are consumed there would be no more leasing activities, including exploration and development which generates new, confirms, or clarifies existing geologic information that enables geologists and engineers to expand the knowledge base of geology. Also, as resources become scarce across the planet, reducing the overall available areas to explore for those resources will drive both cost and need to find alternatives. Deferring these parcels would withdraw them from potential exploration for new deposits of solid and fluid minerals until the RMP is updated or amended with appropriate stipulations. The remaining 91,064 acres that would be offered for lease sale under this alternative would be subject to the same effects as described for the Proposed Action.

Additional Resource Protection Alternative

There would be no direct impact to mineral exploitation, since oil and gas leasing does not authorize exploration and development of oil and gas. Under this alternative, every parcel is available for lease but certain stipulations or lease notices apply. This alternative is most similar to the Proposed Action and is most conducive to mineral exploration and expansion of information toward the study of geology and fluid mineral deposits. Timing limitations and controlled surface use would not prohibit exploration and development but may require more expensive drilling or exploration alternatives to be used, resource development in less than ideal locations, or restrictions on the time of year that work may be conducted. As compared to the Proposed Action, this alternative offers the advantage to prospective lessees that the new stipulations identify important natural resource issues associated with particular parcels – water resources, steep slopes, and deer and pronghorn seasonal habitats – in advance, along with measures to protect them. This would reduce some of the uncertainty of waiting for site- and project-specific NEPA analysis to identify resources of concern and define appropriate conditions of approval.

No Leasing Alternative

Under this alternative, no parcels would be offered for leasing in 2017 and the impacts described above would occur on other leased parcels in the Battle Mountain District.

3.2.16 Land Use Authorizations

Affected Environment

All of the proposed lease parcels are located on public lands with federally controlled surface and subsurface mineral estate. Many of the offered parcels would require a right-of-way (ROW) in order to access the lease parcels. Some proposed parcels include pre-existing land use authorizations such as

grants, leases, permits and withdrawals. Also, grants, leases and permits may be authorized prior to any proposals for exploration by an oil and gas lessee. In these instances, the holder of land use authorization would have a valid existing right to the authorized use of public lands within the lease. Table 11 provides a summary of the existing land use authorizations in the proposed lease parcels.

Table 11. Summary of land use authorizations in proposed lease parcels.

ROW Case File	ROW Holder	ROW Description	Affected Lease Parcel
NVCC 022619	Nevada Department of Transportation (NDOT)	Mineral Material Site (Sec 17)	001
N-53344	Truckee River Ranch LLC	RS 2339 D/C Water Pipeline	001, 002
N-88358	Truckee River Ranch LLC	24.9 kV Distribution line	001
R-3529		Range Improvement	001
N-56922	Truckee River Ranch LLC	RS 2339 D/C Water Pipeline	001,002
NVCC 022622	Nevada Department of Transportation (NDOT)	Fed Aid Highway (Sec 17)	003, 013, 014, 015, 028, 029
Nev 065085	Sierra Pacific Power dba NV Energy	12 kV distribution Line	003
N-06971	US Forest Service	ROW – Road Fed Fac	010
NVCC 023331	Nevada Department of Transportation (NDOT)	Mineral Material Site (Sec 17)	013
N-39908	Nevada Bell	Telephone Line – Round Mountain/Kingston	013, 014, 015
N-46509	Sierra Pacific Power dba NV Energy	24.9 kV distribution line	013, 014, 015, 028, 029
N-48678	Sierra Pacific Power dba NV Energy	24.9 kV distribution line	013, 014
N-62358	Ted Melsheimer	McLeod Creek Pipeline	013, 014, 015
N-63200	Nevada Bell	Smoky Valley Telephone Line	013, 014, 015, 029
N-91092	Arizona Nevada Tower Corp	Kingston Communications Site	013, 014
N-48809	Sierra Pacific Power dba NV Energy	24.9 kV distribution line	015
NVCC 023330	Nevada Department of Transportation (NDOT)	Mineral Material Site (Sec 17)	015
Nev 064382	Young Brothers	ROW – Irrigation Ditch	027, 028
N-34387	Nevada Bell	Austin/Kingston Canyon telephone line	028, 029
N-51091	Ralph Young	Pending ROW - Road	028
N-51784	Ralph Young	Pending ROW – RS 2339 Pre-FLPMA ditch	027, 028, 031, 032
N-01962	Nevada Department of Transportation (NDOT)	Mineral Material Site (Sec 17)	033
N-42324	Wells Rural Electric	14.4 kV distribution line	033, 035, 038, 041
N-58497	Nevada Bell	Buried fiber optic line	033, 035, 038, 040, 041

ROW Case File	ROW Holder	ROW Description	Affected Lease Parcel
N-63162	Sierra Pacific Power dba NV Energy	Falcon - Gonder Fiber Optic Line	035, 036, 038, 040, 041
Nev 001473	Nevada Department of Transportation (NDOT)	Mineral Material Site (Sec 17)	038
Nev 001471	Nevada Department of Transportation (NDOT)	Fed Aid Highway (Sec 17)	038, 040
N-53379	Mobil Oil Corp	40-ft wide Fuel Pipeline	033, 041
N-91500	American Vanadium US, Inc.	Monitoring Station sec. 36	044
N-05638	Mt Wheeler Power Inc.	24.9 kV distribution line	052, 054, 088
N-07318	Nevada Bell	Telephone Line	052, 054
N-74974	Nevada Bell	20-ft wide Telephone Line	052, 054, 088
N-87407	Eureka Moly LLC	Well ROW and accompanying roadways	052
N-53976	Mobil Oil Corp	ROW Road – 40 ft wide	058
N-56120	Nevada Bell	Buried phone cable	084
		Range Improvement Fence	084
Nev 042805	Nevada Department of Transportation (NDOT)	Mineral Material Site (Sec 17)	090, 091
NVCC 018079	Nevada Department of Transportation (NDOT)	Roadway for access to materials site	090, 091
NVCC 018164	Nevada Department of Transportation (NDOT)	Fed Aid Highway (Sec. 32)	091
NVCC 023185	SBC/NV Bell	Buried phone cable	090
N-00248	Nevada Bell	Telephone Line (Pre-FLPMA)	091
N-66394	AT&T	Fiber optic line	090, 091
N-76179	Sierra Pacific Power dba NV Energy	Fiber optic line	090, 091
Nev 050485	Nevada Department of Transportation (NDOT)	Fed Aid Highway (Secs. 7, 17, 20, 29, 31 and 32)	090, 091

Environmental Consequences

Proposed Action

Leasing creates a valid existing right, which could conflict with other existing or future land use authorizations. These conflicts would be mitigated through agreements between relevant operators.

FLPMA requires that prior existing rights must be recognized. If parcels were developed in the future, site-specific mitigation measures and BMPs would be attached as COAs for each proposed activity. Impacts to existing ROWs may occur as a result of disturbance activities associated with potential exploration and development activities.

Applications for ROWs may be required for roads for oil and gas exploration and production activities. These off-lease ROWs would be non-exclusive where possible, that is, they can be used by the general public for other purposes such as access to public lands.

Partial Deferral Alternative

Under this alternative, approximately 104,668 acres are proposed for deferral due to sensitive wetlands, seeps and/or springs, floodplains, playas, steep slopes, or historical features. If deferred these approximately 104,668 acres would not be subject to the potential effects described for the Proposed Action, and any ROWs and other land use authorizations on those parcels would not be affected. The remaining 91,064 acres that would be offered for lease sale under this alternative would be subject to the same potential effects as described for the Proposed Action.

Additional Resource Protection Alternative

Under this alternative, no parcels would be deferred and effects to land use authorizations would be essentially the same as under the Proposed Action.

No Leasing Alternative

Under this alternative, no parcels would be offered for leasing in 2017 and the impacts described above would occur on other leased parcels in the Battle Mountain District.

3.2.17 Socioeconomic Values and Environmental Justice

Affected Environment

The proposed lease parcels are located within three rural counties in central Nevada: Eureka County (73 parcels), Nye County (27 parcels) and Lander County (6 parcels).

Nevada's rural counties are very sparsely populated, with the vast majority of the state's population concentrated in the cities of Las Vegas and Reno. While Las Vegas' rapid growth has been the driving force behind a sharp increase in the state's population density, the rural counties have undergone little change. As of the 2010 U.S. census the three counties intersected by the Assessment Area had an average population density of 1.9 persons per square mile. Nye County was the most densely populated at 2.4 persons per square mile; Eureka County, the most sparsely populated, had two square miles for every person (Table 12).

Primary activities that contribute to the economic base of central Nevada are minerals extraction (especially gold) and energy production, including renewable energy; agriculture (especially cattle and sheep ranching and alfalfa hay farming); and recreation.

The average median income of the three counties intersected by the Assessment Area is higher than that of the state as a whole, and the percent in poverty is lower (Table 12). However, Nye County has a lower median income than the statewide average, and a higher poverty rate than the statewide 14.9% or the national 13.5% poverty rate.

Table 12. Population density and income data by county.

County (State)	Area in square miles	Population, 2010 census	Population density per square mile	Median household income ¹	Percent population in poverty ¹
Eureka	4180	1987	0.5	\$65,459	9.5%
Nye	18,199	43,946	2.4	\$43,819	17.5%
Lander	5519	5775	1.0	\$76,713	10.8%
3 Counties	$\Sigma=27,898$	$\Sigma=51,708$	$\bar{x} = 1.9$	$\bar{x} = \$61,997$	$\bar{x} = 12.6\%$
(Nevada)	(110,567)	(2,700,551)	(244.2)	(\$52,544)	(14.9%)

¹SAIPE 2015. Small Area Income and Poverty Estimates: State and County Estimates for 2015. Last updated December 14, 2016. <https://www.census.gov/did/www/saipe/data/statecounty/data/2015.html>

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 Assessment Area, while there are no known communities with disproportionate representation of any minority race or ethnicity, the region does have a disproportionately large low-income population as compared to the state of Nevada overall. Northwest Nye County has a 48% low income population; north-central Nye County, 23%; southeastern Lander County, 38%; and southwestern Eureka County, 43%, according to the EPA EJ Screen Mapper (<https://ejscreen.epa.gov/mapper/> accessed February 2017). The same source gives the low income population of the state of Nevada overall as 11.4%. The region thus may be considered as having an environmental justice population in terms of poverty.

Small towns and unincorporated communities nearest the Assessment Area and most likely to experience economic effects of any future exploration, development or production on leased parcels include Tonopah, Battle Mountain, Round Mountain, Hadley, Austin, Kingston, and Eureka.

Environmental Consequences

Proposed Action

The only direct impact of issuing new oil and gas leases on socioeconomics within the Assessment Area would be the generation of revenue from the sale of the leases, as the State of Nevada retains 49 percent of the proceeds from lease sales. From March 2010 to July 2014 total revenue generated from both competitive and non-competitive oil and gas lease sales on the Battle Mountain District was \$2,411,377.

Subsequent oil and gas exploration, development and production could affect the local economy in terms of additional jobs, income and tax revenues. During the exploration phase, oil and gas companies typically provide in-house scientists and technicians to do the majority of this work. After initial surveys have been completed, oil and gas exploration and development activities could include road and drill pad construction, which could be contracted to local contractors. Wells would typically be drilled over a period of time and not at the same time. The exploration crews, ranging from 20 to 30 people, would spend a portion of their salary (approximately \$200-\$250 per person per day) in local communities for the duration of the project (four to eight weeks).

During development and production phases, the potential for local socioeconomic impacts could increase. More long-term roads and drill pads could be constructed, along with associated support facilities. Typically, most of this work is supplied by local contractors. Local businesses may realize increased revenue from the purchase of supplies, meals, rooms, etc. Local trucking and delivery companies may also benefit economically by transporting supplies, building materials and oil products.

Oil production from federal lands is subject to a 12.5 percent royalty payment to the federal government. Fifty percent of that amount is provided to the state government, which then provides a portion back to the counties.

These positive indirect impacts to socioeconomics within the Assessment Area from the Proposed Action would likely be minimal, given the RDF scenario which predicts 25 wells would be built within the Battle Mountain District in the next ten years. However, given the region's high poverty rate, it is noteworthy that this small positive economic impact would occur in a context of economic need, constituting a positive effect in terms of environmental justice. The potential for exposure to other environmental effects as a result of the lease sale, including human health hazards, is considered to be low (see effects analyses for other resources, especially discussions of air quality, section 3.2.1; water quality and quantity, 3.2.4; hazardous and solid waste, 3.2.18).

The Proposed Action would not induce substantial growth or concentration of population, displace a large number of people, cause a substantial reduction in employment, reduce wage and salary earnings, cause a substantial net increase in county expenditures, or create a substantial demand for public services.

For any future proposed project on any parcel that is leased, additional site-specific, project-specific analysis would be required, including a thorough examination of socioeconomics and environmental justice. The required NEPA analysis would address all aspects of exploration, development and production, including connected actions such as transportation of any oil or gas produced.

Partial Deferral Alternative

Under this alternative, approximately 104,668 acres are proposed for deferral; the activities predicted by the RDF scenario would occur on other leased parcels within the Assessment Area and/or elsewhere in the Battle Mountain District. Because nearby communities would experience any socioeconomic or environmental justice effects rather than the parcels themselves, and the deferral parcels are distributed throughout the Assessment Area rather than grouped near any particular community, the effects would be essentially the same as described for the Proposed Action.

Additional Resource Protection Alternative

Socioeconomic and environmental effects under this alternative would be the same as described for the Proposed Action.

No Leasing Alternative

Under this alternative, no parcels would be offered for leasing in 2017; the activities predicted by the RDF scenario would occur on other leased parcels in the Battle Mountain District. Socioeconomic effects

would be the same as described for the Proposed Action, possibly affecting some different communities in the Battle Mountain District.

3.2.18 Waste, Hazardous and Solid

Affected Environment

The majority of the proposed lease parcels are located in rural areas and not adjacent to any schools or populated centers. However, there are several ranches and ranching/mining communities that are within a close proximity of the proposed parcels. Oil and gas development, which can include 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.

Environmental Consequences

Proposed Action

The RFD scenario (Section 2.4.1) predicts that approximately 25 exploration wells would be expected to be drilled in the Battle Mountain District in the next 10 years, and few if any of these would continue into development and production phases. 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: Impacts of the long-term production phase could include spills and leaks from routine plant operations. Substances that could be leaked/spilled include 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 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 the removal operations. Based on meeting regulatory requirements and implementing BMPs and COAs, adverse impacts from hazardous materials would be minor.

When the RFD for the BMD is considered, impacts to natural resources would generally be negligible because the substances used for these operations (as described in the affected environment) would be properly handled, stored, and disposed of in accordance with applicable federal, state and local regulations. Proper management of these substances in accordance with federal, state and local regulations 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.

An exception would be parcels containing extensive wetlands, springs/seeps, riparian areas, floodplains and seasonally flooded playas. Where water is present, contaminants from any accidental spillage are easily brought into solution and spread throughout the system, as noted in the discussion of water quality in Section 3.2.4. The importance of water and the associated ecosystems to wildlife and to wild horses and burros is discussed in Sections 3.2.8 and 3.2.9. Impacts of any hazardous waste spills in these rare and sensitive areas would be potentially substantial and difficult to mitigate. As in other areas, the proponent would be required to avoid, minimize, rectify, reduce, or compensate the threat.

Partial Deferral Alternative

Under this alternative, approximately 104,668 acres are proposed for deferral due to sensitive wetlands, seeps and/or springs, floodplains, playas, steep slopes, or historical features. If deferred these approximately 104,668 acres would not be subject to the potential effects described for the Proposed Action. Deferring the wetlands, seeps/springs, riparian areas, floodplains and playas would prevent the potential effects to these resources of any accidental hazardous waste spillage.

The remaining 91,064 acres that would be offered for lease sale under this alternative would be subject to the generally negligible potential effects as described for the Proposed Action.

Additional Resource Protection Alternative

Under this alternative, no parcels would be deferred. The CSU Water Resources stipulation, which would be effective immediately on lease sale, 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 to these areas, including accidental contamination. The stipulation

allows for an exception “when areas cannot be avoided and when engineering, best management practices, and/or design considerations are implemented to mitigate impacts to water resources.”

No Leasing Alternative

Under this alternative, no parcels would be offered for leasing in 2017 and the impacts described above would occur on other leased parcels in the Battle Mountain District.

Chapter 4. Cumulative Effects

The Interdisciplinary Team examined the Proposed Action and alternatives for cumulative effects to the Assessment Area and the surroundings. Cumulative impacts are those effects on resources within an area or region caused by a combination of past, present and reasonable foreseeable future actions (RFFAs). These impacts may be individually minor but added together over time may become significant (40 CFR 1508.7).

4.1. Methods and Assumptions

This analysis considers the potential cumulative effects of leasing all (Proposed Action) or a subset (Partial Deferral Alternative) of the 106 lease parcels nominated for the June 2016 lease sale. To be cumulative, effects must overlap in both time and space. As with the effects analysis in Chapter 3, it is unknown if, when or where exploration and development projects would be proposed, or what type or extent of projects. Therefore this analysis considers general possible effects of future uses of the lease parcels. A more specific cumulative effects analysis would be part of the NEPA process for any project proposed.

4.1.1 Alternatives Considered

The ID Team considered cumulative effects of the Proposed Action, Partial Deferral Alternative, New Stipulations Added Habitat Alternative, and No Leasing Alternative (Section 2.1) on all resources. For several resources the potential effects of the first two alternatives are essentially the same, except that those effects could (Proposed Action) or could not (Partial Deferral Alternatives) occur on the parcels to which stipulations apply. In these cases, both are discussed together. For all resources, the difference between these and the No Leasing Alternative is simply that cumulative effects would occur on other leased parcels. The No Leasing Alternative is not discussed separately in Section 4.2.

4.1.2 Cumulative effects study area, timeframe, and RDF

The cumulative effects study area (CESA) for this EA encompasses the entire BLM Battle Mountain District in central Nevada (see map inset, Figures 2-5). The analysis uses the same 10-year timeframe and reasonably foreseeable development (RDF) scenario as is described in detail in Section 2.4: based on activity over the past 10 years we would predict that 25 oil wells would be drilled in the Battle Mountain District in the next 10 years, with surface disturbance totaling 65 to 100 acres.

4.1.3. Reasonably Foreseeable Future Actions (RFFAs)

Along with oil and gas exploration, development and production as described under the RDF scenario (Section 2.4), based on recent and current activities the following future actions could occur concurrently in the Battle Mountain District during the next 10 years:

- geothermal exploration and development
- mineral exploration and mining
- gravel pit development and production
- wind power construction

- communication site construction
- road building
- powerline construction
- livestock grazing
- fence construction
- off-highway vehicle use
- non-motorized recreation such as hunting, mountain biking, geo-caching
- withdrawal of water for irrigation (agriculture) and mining
- wild horse gathers
- noxious weed treatment
- fire suppression and rehabilitation
- construction of wildlife habitat improvement projects

4.2 Cumulative Effects Analysis

4.2.1 Cumulative Effects to Air Quality, Climate Change, Greenhouse Gases

Proposed Action , Partial Deferral Alternative, and Additional Resource Protection Alternative

Drilling of 25 wells would produce between 19,775 tons and 92,050 tons of greenhouse gas emissions in terms of short tons of CO₂ equivalent (CO₂e), using a Global Warming Potential (GWP) of 1 for CO₂, 21 for CH₄, and 310 for N₂O,(Erbes, 2013). Total CH₄ contributions would be between 45 tons per year (GWP 3,600 tpy) and 415 tons per year (GWP 8,715 tpy). Total N₂O contributions would be between 1 ton per year (GWP 310 tpy) and 15 tons per year (GWP 4,650 tpy). Total CO₂e contributions would be between 16,275 tons per year (GWP 16,275 tpy) and 78,900 tons per year (GWP 78,900 tpy). This compares to the total worldwide contribution of CH₄ which is 730,832,399 tons per year (GWP 15,347,480,381 tpy) or 0.00015 percent of the world wide total CH₄ yearly emissions.

The incremental increase in these impacts is small when compared to the level of impacts that already exist in the sub-basins as described above in the Affected Environment section. These cumulative impacts would continue to occur under any of the alternatives.

4.2.2 Cumulative Effects to Soils

Proposed Action

The disturbance associated with oil and gas exploration and production would add to the disturbances from mining exploration, mine development, grazing management, wild fires, fire rehabilitation and range improvement projects. Creating new roads, constructing drill pads and developing wells and mines removes available vegetation and increases the susceptibility of soil to erosion and compaction, and disturbs microbiotic crusts. However, the cumulative impacts of oil and gas exploration and development on soils are generally expected to be minimal due to the relatively small area of disturbance in the RDF timeframe, concurrent reclamation, and the development of site-specific mitigation and BMPs. This alternative would have greater potential to contribute to cumulative effects to soils than the other alternatives because it does not incorporate deferrals or stipulations addressing steep slopes.

Partial Deferral Alternative

Under this alternative, approximately 104,668 acres are proposed for deferral due to sensitive wetlands, seeps and/or springs, floodplains, playas, steep slopes, or historical features. If deferred these approximately 104,668 acres would not be subject to the potential effects described for the Proposed Action, involving temporary disturbance to 65-100 acres of soils; and would not contribute to a risk of cumulative effects. Certain parcels with slopes of 40% or greater, which are potentially more vulnerable to erosion depending on soil type, would be deferred under this alternative and would not contribute to cumulative effects.

Additional Resource Protection Alternative

Under this alternative, no parcels would be deferred but additional acres would be protected by CSU stipulations effective immediately, including additional riparian-wetland areas containing soils that have higher susceptibility to disturbance. Also, all slopes greater than 30% would receive protective CSU stipulations. This alternative would therefore contribute less to the potential for cumulative effects to soils than the Proposed Action or the Partial Deferral Alternative.

No Leasing Alternative

Under this alternative, no parcels would be offered for leasing in 2017 and the impacts described above would occur on other leased parcels in the Battle Mountain District.

4.2.3 Cumulative Effects to Paleontological Resources

Proposed Action, Partial Deferral Alternative, and Additional Resource Protection Alternative

Several ongoing and potential actions in the area, such as mining, mineral and geothermal exploration, off-highway vehicle use, and livestock grazing, have the potential to cumulatively impact paleontological resources.

The geographic scope or extent for paleontological resources is generally the geographic formation in question. None of the parcels identified for the 2017 Oil & Gas Lease Sale have been surveyed to determine the boundaries and geographic extent of fossil resources or any paleontological localities. Parcels identified as having low potential for containing significant paleontological resources would not be subject to cumulative effects; however, BMPs and COAs would apply in the event a significant paleontological resource were encountered as a result of any ground-disturbing oil and gas exploration or development activities. Parcels identified as having moderate to high potential for containing significant paleontological resources may require a field determination to map locations of any vertebrate fossils or any scientifically significant fossils; once mapped, the geographic and temporal scope for paleontological resources can be defined, followed by an analysis to determine what, if any, impacts there would be to paleontological resources resulting from past, present, or reasonably-foreseeable actions within the CESA.

It is expected that the proposed action may contribute to cumulative impacts through the reasonably foreseeable role of oil and gas exploration and development; however, with implementation of

appropriate mitigation, BMPs, and the COAs, impacts to significant paleontological resources may be avoided.

4.2.4 Cumulative Effects to Water (Surface and Ground) Quality, Quantity

Proposed Action

In Section 3.2.18 the risk of accidental spillage are described, and those risks are noted to be increased in the several parcels that contain springs/seeps, riparian areas, floodplains and seasonally-flooded playas. The Proposed Action would not result in any direct incremental increase in cumulative impacts to water resources, but subsequent oil and gas development would likely increase impacts as described in Section 3.2.4. Potential exploration and development would likely result in water diversions, and surface water quality could be affected by development.

Protection of water resources would be accomplished through implementation of best management practices along with specific restrictions that may be applied to individual parcels. COAs may be applied to mitigate any known environmental or resource conflicts that may occur on a given lease parcel. For example, lessees may be required to locate facilities a distance of 200 meters from streams or off of the 100-year floodplain. These restrictions would be implemented on an individual lease basis and would be required as COAs for exploration and/or development.

Partial Deferral Alternative

Under this alternative, approximately 82,260 acres are proposed for deferral due to sensitive springs/seeps, riparian areas, floodplains and seasonally-flooded playas. If deferred these approximately 82,260 acres would not be subject to the potentially substantial effects to these resources of any accidental spillage, as described for the Proposed Action; and would not contribute to a risk of cumulative impacts.

Additional Resource Protection Alternative

Under this alternative, no lands would be deferred; instead, the Water Resources CSU stipulation would be applied immediately to the same target resources on the same parcels as under the Partial Deferral Alternative, plus additional acres. The stipulation could provide a level of protection similar to that of deferral followed by future stipulations, and would not contribute to a risk of cumulative impacts.

No Leasing Alternative

Under this alternative, no parcels would be offered for leasing in 2017 and the impacts described above would occur on other leased parcels in the Battle Mountain District.

4.2.5 Cumulative Effects to Vegetation

Proposed Action

The disturbance associated with potential oil and gas exploration and production would add to the disturbances from mining exploration, mine development, grazing management, wild fires, fire rehabilitation and range improvement projects. Creating new roads, constructing drill pads and developing wells removes vegetation used by wildlife, livestock, wild horses and burros for forage and

habitat. Disturbed areas would be more susceptible to wind and water erosion, soil compaction and invasion by invasive species. However, the cumulative impacts of oil and gas exploration and development are expected to be minimal due to the relatively small area of disturbance in the RFD scenario timeframe, concurrent reclamation, and the development of site-specific mitigation and BMPs.

Wetlands and riparian vegetation are especially susceptible to impacts from livestock and wild horse and burro grazing, invasive/non-native weeds, road building, and off-highway vehicle use. If water supply to wetlands or riparian vegetation is affected by the Proposed Action, these vegetation communities would be less resilient to these impacts, and the Proposed Action would have a greater contribution to cumulative effects.

Partial Deferral Alternative

Under this alternative, approximately 104,668 acres are proposed for deferral due to sensitive wetlands, seeps and/or springs, floodplains, playas, steep slopes, or historical features. If deferred these approximately 104,668 acres would not be subject to the potential effects described for the Proposed Action; and not contribute to a risk of cumulative effects. This alternative would not contribute substantially to cumulative effects to riparian and wetlands vegetation communities, as parcels that include extensive areas of these communities would be deferred.

Additional Resource Protection Alternative

Under this alternative, instead of being deferred, parcels with riparian-wetland vegetation communities would be protected by a new Water Resources stipulation which would cover more area than the deferrals, although with a somewhat lower level of protection. Like the Partial Deferral Alternative, it would not contribute substantially to cumulative effects to these vegetation communities.

4.2.6 Cumulative Effects to Forestry and Woodland Products

Proposed Action

A number of past and present actions and RFFAs in the area, such as mining, mineral and geothermal exploration, off-highway vehicle use and livestock grazing, could contribute to cumulative impacts. Based on the RFD scenario, foreseeable impacts could result in the construction of a number of drilling sites, production facilities and transportation corridors. The long-term change in vegetation and associated potential loss of woodland productivity (cottonwood and willow) would not likely result in substantial impacts since the Assessment Area contains no woodlands and only small isolated patches of riparian areas. Based on the RFD and when considering site-specific mitigation measures that would be developed for potential exploration and development, cumulative impacts to forest and woodland resources would be minimal.

Partial Deferral Alternative and Additional Resource Protection Alternative

Under these alternatives, any exploration and development efforts on 2017 Lease Sale parcels would be focused outside and away from riparian vegetation. There would be very little potential for this alternative to contribute to the loss of cottonwood and willow.

No Leasing Alternative

Under this alternative, no parcels would be offered for leasing in 2017 and the impacts described above would occur on other leased parcels in the Battle Mountain District.

4.2.7 Cumulative Effects to Noxious Weeds and Invasive Species

Proposed Action

Potential exploration and development resulting from leasing the parcels would increase surface-disturbing activities that remove vegetation, compact soil, increase erosion and sediment yield, may result in fragmented native plant communities and increase competition from noxious weeds, invasive and non-native species. The disturbance associated with potential oil and gas exploration and production would add to the disturbances from mining exploration, mine development, grazing management, wild fires, fire rehabilitation and range improvement projects. Creating new roads, constructing drill pads and developing wells removes vegetation and disturbed areas would be more susceptible to invasion by invasive species, as described in Section 4.2.5, Cumulative Effects to Vegetation. However, the cumulative impacts of oil and gas exploration and development are expected to be minimal in most areas due to the relatively small area of disturbance in the RDF timeframe, concurrent reclamation, and the development of site-specific mitigation and BMPs.

As noted in Section 4.2.5, wetlands are especially susceptible to loss of vegetation due to livestock and wild horse and burro grazing, invasive/non-native weeds, road building, and off-highway vehicle use. If water supply to wetlands or riparian vegetation is affected by the Proposed Action, these vegetation communities would be less resilient to these cumulative impacts and more vulnerable to weed invasion, so that the Proposed Action in turn would have a greater contribution to cumulative effects. Also, locations with surface water are especially vulnerable to weed invasion, as noted in Section 3.2.7; the Proposed Action would have a greater probability of contributing to cumulative effects to noxious weeds and invasive species as compared to the Partial Deferral Alternative.

Partial Deferral Alternative

Under this alternative, approximately 104,668 acres are proposed for deferral due to sensitive wetlands, seeps and/or springs, floodplains, playas, steep slopes, or historical features. If deferred these approximately 104,668 acres would not be subject to the potential effects described for the Proposed Action; and not contribute to a risk of cumulative effects. This alternative would not contribute substantially to cumulative effects to noxious weeds and invasive species in riparian and wetlands vegetation communities, as parcels that include extensive areas of these communities would be deferred.

Additional Resource Protection Alternative

Under this alternative, additional riparian and wetland acres would be protected by the Water Resources CSU stipulation as compared to the Partial Deferral Alternative. Although the CSU stipulation would be less protective than deferral followed by NSO stipulations, this alternative would also not be expected to contribute substantially to cumulative effects to noxious weeds and invasive species in riparian and wetlands vegetation communities,

No Leasing Alternative

Under this alternative, no parcels would be offered for leasing in 2017 and the impacts described above would occur on other leased parcels in the Battle Mountain District.

4.2.8 Cumulative Effects to Wildlife Resources

Proposed Action

Cumulative impacts to wildlife and associated wildlife resources from oil and gas exploration and production activities can range from short-term, short-duration to potentially permanent extirpation of regionally unique species. Potential disturbances can result in fragmentation and degradation of habitat. Creating new roads, constructing drill pads and developing wells removes vegetation used by wildlife, livestock, wild horses and burros for forage and habitat. Disturbed areas would be more susceptible to wind and water erosion, soil compaction and invasion by invasive species. In addition, potential disturbances from oil and gas exploration and production activities could result in water diversions and impacts to surface water quality and quantity. Water is already a limiting factor for most wildlife, especially known and unknown aquatic invertebrates, in xeric environments. Water provides needed habitat (i.e. ephemeral drainages, springs, seeps) and nutrients for plant growth. The plants and invertebrates, in turn, provide for nourishment for wildlife farther up the food web. As stated in Section 3.2.8, many of these wildlife species are BLM sensitive species.

Species designated as Bureau sensitive must be native species found on BLM administered lands for which BLM has the capability to significantly affect the conservation status of the species through management, and either:

- a. There is information that a species has recently undergone, is undergoing, or is predicted to undergo a downward trend such that the viability of the species or a distinct population segment of the species is at risk across all or a significant portion of the species range, or
- b. The species depends on ecological refugia or specialized or unique habitats on BLM-administrated lands, and there is evidence that such areas are threatened with alteration such that the continued viability of the species in that area would be at risk.

In ephemeral drainages, seeps, springs, and wetlands, the cumulative impact to wildlife and associated wildlife resources from oil and gas exploration and production activities could be long-term and long-duration. There is potential for extirpation, even extinction, of aquatic species as has happened in the past.

In upland habitats, the cumulative impact to wildlife and associated wildlife resources from oil and gas exploration and production activities could be short-term and short-duration. For example, seasonal utilization by wildlife such as greater sage-grouse, mule deer, desert bighorn sheep, and migratory birds may be impacted. In general, these are expected to be minimal due to the relatively small area of disturbance in the RFD scenario timeframe, concurrent reclamation, and the development of site-specific mitigation and BMPs. Greater sage-grouse seasonal habitats are addressed by stipulations (Appendix B).

In summary, the cumulative impacts to wildlife and associated wildlife resources from oil and gas exploration and production activities can range from short-term, short-duration to long-term long-duration, to potentially permanent extirpation of regionally unique species.

Partial Deferral Alternative

Under this alternative, approximately 104,668 acres are proposed for deferral due to sensitive wetlands, seeps and/or springs, floodplains, playas, steep slopes, or historical features. If deferred these approximately 104,668 acres would not be subject to the potential effects described for the Proposed Action; and not contribute to a risk of cumulative effects. This alternative would not contribute substantially to cumulative effects to wetland habitats, as parcels or parts of parcels with extensive wetland habitat are proposed for deferral.

Additional Resource Protection Alternative

Cumulative effects under this alternative would be similar to those of the Partial Deferral Alternative, but with additional protection for mule deer and pronghorn from timing limit stipulations applied to their crucial winter ranges, and a timing limit lease notice applied to mule deer movement corridors.

No Leasing Alternative

Under this alternative, no parcels would be offered for leasing in 2017 and the impacts described above would occur on other leased parcels in the Battle Mountain District.

4.2.9 Cumulative Effects to Wild Horses and Burros

Proposed Action

Cumulative impacts to wild horses from oil and gas leasing would consist of the impacts occurring as a result of exploration and production which could occur in lease areas associated with the RFD scenario. However, the cumulative impacts of oil and gas exploration and development are expected to be minimal due to the relatively small area of disturbance in the RFD scenario timeframe, concurrent reclamation, and the development of site-specific mitigation and BMPs.

As described in Section 3.2.9, potential impacts to wild horses or burros from the oil and gas leasing would not occur until a lessee were to pursue exploration or drilling, at which time additional project-specific, site-specific environmental analysis would be completed. Potential impacts would include influences to movement and use patterns, surface disturbance to soils and vegetation, and potential impacts to springs used by wild horses, as described in Sections 3.2.2, 3.2.4 and 3.2.5. Past, present and reasonably foreseeable projects that have had and could continue to have impacts to wild horses include mining exploration, geothermal exploration, oil and gas exploration, power line construction, fuels reduction projects, wild horse gathers, communication site construction and noxious weed treatments. These activities result in isolated and usually limited soil and vegetation disturbance or loss, and impacts to animal distribution and use patterns.

Cumulative impacts could include increased fragmentation of wild horse habitat and cumulative increases in vegetation and soil disturbances, which result in incremental losses in availability of quality habitat used for wild horses.

Mining activity, oil and gas production, geothermal development, gravel pit expansion, road building, fencing and wild horse or burro gathers, are all activities which can impact wild horse or burro distribution and seasonal movement throughout and between HMAs. Each activity could result in incremental restrictions to free roaming behavior of wild horses and burros and over time may influence habitat use patterns, genetic interchange and use of water sources.

Oil and gas exploration could involve overland travel, road construction, seismic testing and drilling which could cause surface disturbance. Increased vehicle traffic could affect wild horses due to increased noise and dust levels. Over time, the areas of disturbance could cumulatively increase and impact the quality and quantity of habitat available to wild horses, as well as increase risks for erosion and noxious weed invasion.

According to the RFD scenario (Sections 2.4.1 and 2.4.2), it is unlikely that large areas of disturbance would occur within the parcels offered for lease within wild horse and burro HMAs, and therefore the effects are anticipated to be minimal.

Exploration and production activities would be analyzed on a site specific basis. Effects of potential proposed actions to wild horse and burro populations in the HMAs would be analyzed and mitigation measures developed to avoid or reduce impacts, or COAs would be implemented to protect the long term health of wild horses and burros.

This alternative would increase the potential for future disturbance to contribute to cumulative impacts to wild horse habitat on steep slopes and herd distribution and movement patterns in the Diamond HMA, and to springs that constitute important water sources for wild horses in the Diamond, Fish Creek and Whistler Mountain HMAs as described in Section 3.2.9.

Partial Deferral Alternative

Under this alternative, approximately 104,668 acres are proposed for deferral due to sensitive wetlands, seeps and/or springs, floodplains, playas, steep slopes, or historical features. Approximately 23,626 acres proposed for deferral are located within wild horse or burro HMAs. If deferred these acres would not be subject to the potential effects described for the Proposed Action, involving temporary disturbance to 65-100 acres over the next 10 years as described in the RFD scenario. Therefore, this alternative would not contribute to cumulative effects in the deferred areas. Because the parcels of concern would be deferred, this alternative would not increase the potential for future disturbance to contribute to cumulative impacts to wild horse habitat on steep slopes and herd distribution and movement patterns in the Diamond HMA, or to springs that constitute important water sources for wild horses in the Diamond, Fish Creek and Whistler Mountain HMAs as described in Section 3.2.9.

Additional Resource Protection Alternative

Under this alternative, the same parts of HMAs that would be deferred under the Partial Deferral Alternative are proposed for CSU stipulations, effective immediately, to protect sensitive wetlands, seeps

and/or springs, floodplains and playas. Additional acres would be subject to the stipulation because it addresses whole parcels rather than parts of parcels. The same areas with steep slopes would be addressed by a CSU stipulation, plus areas with slopes between 30 and 40 percent (see Appendix C.2). These stipulations would help to decrease the habitat fragmentation or changes to distribution that would result from the loss of water sources and forage. On the ten parcels where TL stipulations for mule deer and pronghorn seasonal habitats overlap HMAs, horses would receive added protection from disturbance during part of the foaling season. Impacts to herd health and genetic interchange would be reduced as a result of fewer effects on distribution.

No Leasing Alternative

Under this alternative, no parcels would be offered for leasing in 2017 and the impacts described above would occur on other leased parcels in the Battle Mountain District.

3.2.10 Cumulative Effects to Rangeland Resources

Proposed Action

The disturbance associated with oil and gas exploration and production would add to the disturbances from mining exploration, mining and off-highway vehicle use. Creating new roads, constructing drill pads and developing wells and mines removes available forage for wildlife, livestock, wild horses and burros. Reductions of available forage could have an impact on ranching operations. However, based on the RFD scenario, the cumulative impacts of the proposed action on rangeland resources are expected to be minimal due to the relatively small area of disturbance (65-100 acres), concurrent reclamation and developed site-specific mitigation.

Partial Deferral Alternative

Under this alternative, approximately 104,668 acres are proposed for deferral due to sensitive wetlands, seeps and/or springs, floodplains, playas, steep slopes, or historical features. If deferred these approximately 104,668 acres would not be subject to the potential effects described for the Proposed Action, involving temporary disturbance to 65-100 acres of rangeland resources. Therefore, this alternative would not contribute to cumulative effects in the deferred areas.

Additional Resource Protection Alternative

Under this alternative, no parcels would be deferred and cumulative effects to rangeland resources would be similar to those described for the Proposed Action.

No Leasing Alternative

Under this alternative, no parcels would be offered for leasing in 2017 and the impacts described above would occur on other leased parcels in the Battle Mountain District.

4.2.11 Cumulative Effects to Cultural Resources

Proposed Action

Several ongoing and potential actions in the area, such as mining, mineral and geothermal exploration, off-highway vehicle use, and livestock grazing, have the potential to cumulatively impact cultural resources. The majority of parcels nominated for the 2017 Oil & Gas Lease Sale have not been inventoried for cultural resources; therefore, the types of resources that may be present in any particular area within parcels are unknown. A CESA cannot be defined for cultural resources until the presence of such resources is known. A Class III cultural resources inventory would be required prior to development within parcels. Once an inventory is completed, the geographic and temporal scope for analysis would be defined, followed by an analysis to determine what, if any, impacts there would be to cultural resources resulting from past, present, or reasonably-foreseeable actions within the CESA.

The 2017 Oil & Gas Lease Sale does not authorize any ground disturbance and therefore has no direct effect to cultural resources; however, the reasonably foreseeable role of oil and gas exploration and development could cumulatively result in adverse effects to cultural resources. Appropriate mitigation, BMPs, and COAs would be implemented to resolve any adverse effects to historic properties.

As described in Section 3.2.11, there is a potential for any future oil and gas activity near the Pony Express/Overland Trail, a historic property that qualifies for inclusion on the National Register of Historic Places, to result in an adverse effect to the route segment and to the trail as a whole. Any development within the physical footprint of the site—or within its viewshed or auditory sphere—has the potential to adversely impact the site's historical integrity of setting, setting, and feeling. Mining activity within the Battle Mountain District located along or adjacent to the Pony Express Trail has the ability to affect the trail's auditory and/or visual sphere. Currently there are two foreseeable future mining projects abutting the Trail, either permitted or in the permitting and NEPA review process: General Moly's Mount Hope Molybdenum Mine and McEwen Mining's Gold Bar Project. These effects acting concurrently along multiple sections of the trail could lead to loss of the aspects of historical integrity listed above, for the life of each mine and until restoration is completed. Such losses would be cumulative with those resulting from oil and gas development under the proposed action. Full loss of historical integrity resulting from direct or cumulative effects could result in Nevada's section of the Pony Express Trail being delisted from the National Register of Historic Places.

In describing cumulative impacts to the trail as a whole, the Comprehensive Management and Use Plan and Final EIS for the trail (NPS 1999) states (p. 123), "Many areas with significant trail resources have undergone substantial energy development, including oil and gas drilling and pipeline and powerline construction. Continued drilling and construction in these areas could pose adverse cumulative impacts on natural and cultural trail resources. Powerlines, pipelines, and drilling equipment could adversely impact significant trail landscapes, which could also adversely affect the visitor experience." Deferring the potentially-impacted acreage in Parcel 105 would help prevent these impacts to the trail as a whole.

Partial Deferral Alternative

As described in Section 3.2. 11, under this alternative, approximately 104,668 acres are proposed for deferral, including 160 acres of Parcel NV-17-06-105 that are traversed by the Pony Express/Overland Trail and would be withheld from lease sale pending development of a No Surface Occupancy (NSO) stipulation in the updated RMP, minimizing the potential for effects. This alternative would therefore have negligible potential to contribute to cumulative effects.

Additional Resource Protection Alternative

Under this alternative, parcels recommended for deferral under the Partial Deferral Alternative would be offered for lease, subject to an additional lease notice which alerts lessees and decision-makers to avoid, mitigate, or minimize adverse effects. If the cumulative effects to cultural resources could not be avoided or mitigated—and the proposed development is not disapproved—then the cumulative effects would be similar to those predicted for the Proposed Action.

No Leasing Alternative

Under this alternative, no parcels would be offered for leasing in 2017 and the impacts described above would occur on other leased parcels in the Battle Mountain District.

4.2.12 Cumulative Effects to Native American Cultural Concerns

Proposed Action, Partial Deferral Alternative, and Additional Resource Protection Alternative

Fluid mineral leasing and exploration may affect sites and associated activities of a cultural, traditional and spiritual nature. Presently, impacts to many cultural, traditional, spiritual sites and associated activities have been avoided through Native American consultation efforts. Only the potential impacts to tribal resources were analyzed in this EA because it evaluates the leasing of oil and gas proposed parcels and does not analyze areas of proposed surface disturbance where impacts might be expected. In accordance with the National Historic Preservation Act (P.L. 89-665), the National Environmental Policy Act (P.L. 91-190), the Federal Land Policy and Management Act (P. L.94-579), the American Indian Religious Freedom Act (P.L. 95-341), the Native American Graves Protection and Repatriation Act (P.L.101-601) and Executive Order 13007, the BLM must also provide affected tribes an opportunity to comment and consult on proposed actions. BLM must attempt to limit, reduce, or possibly eliminate any negative impacts to Native American traditional/cultural/spiritual sites, activities, and resources. As stated above, if, as a result of leasing, a ground disturbing plan to explore or develop is submitted to BLM, all applicable laws, regulations, directives, SOPs, and stipulations and limitations would apply. BLM would work with the operator to mitigate effects to traditional/ cultural or religious sites on activities associated with any surface occupancy that results from oil and gas leasing. Consequently, the BLM must take steps to identify locations having traditional/cultural or religious values to Native Americans and ensure that its actions do not unduly or unnecessarily burden the pursuit of traditional religion or traditional values.

Potential residual effects of any surface occupancy that results from oil and gas leasing may be cumulative with other past and present actions and RFFAs. If or when site-specific activities are proposed in the future and specific concerns are identified, a thorough cumulative effects analysis would be part of the additional project-specific, site-specific NEPA analysis conducted at that time.

No Leasing Alternative

Under this alternative, no parcels would be offered for leasing in 2017 and the impacts described above would occur on other leased parcels in the Battle Mountain District.

4.2.13 Cumulative Effects to Recreation

Proposed Action

Past and present actions and RFFAs with the greatest potential to affect recreation include geothermal exploration and development, mineral exploration and mining, gravel pit development and production, wind power construction, communication site construction, and road building. Given that many outdoor recreation activities are dependent upon a high quality visual/aesthetic environment, such developments, including fluid mineral development, have the potential to cumulatively lower the quality of recreational experiences in the Assessment Area. However, given the RFD scenario for fluid minerals, other existing and foreseeable developments, any mitigation measures developed during additional site-specific analysis, and required reclamation (recountouring and revegetation) of any abandoned projects, it is not anticipated that the quality of recreational experiences would be substantially reduced overall.

However, as described in Section 3.2.13, development on or near the Pony Express National Historic Trail has the potential to both exclude the public from use of the Trail, and represent an incompatible use. Currently there are two foreseeable future mining projects abutting the Trail, either permitted or in the permitting and NEPA review process: General Moly's Mount Hope Molybdenum Mine and McEwen Mining's Gold Bar Project. Any future development in Parcel 105 resulting from the Proposed Action, and any other developments in the vicinity of the Trail, would potentially contribute to cumulative impacts to the Trail's setting and violate the management direction provided in 16 USC 1246(c) to provide sufficient access to historic trails and avoid activities incompatible with the purposes for which they were established. Such impacts would also contribute to cumulative impacts to the visitor experience along the trail as a whole, as described in Comprehensive Management and Use Plan and Final EIS for the trail (NPS 1999, quoted in Section 4.2.11 of this EA).

Increased commercial development could increase the population of the area, which would in turn create an increase in all recreational activities. Examples of increased activity would be visits to WSAs, hunting and OHV use in the Assessment Area.

Partial Deferral Alternative

As described in Section 3.2. 13, under this alternative approximately 104,668 acres, including 160 acres of Parcel 105 which encompass the Pony Express National Historic Trail and its viewshed, would be deferred from the June 2017 Lease Sale pending development of a No Surface Occupancy (NSO) stipulation in the updated RMP. This would prevent the Proposed Action from contributing to cumulative impacts to the Trail's setting and to public access to the Trail. The NSO stipulation in the updated RMP would also minimize cumulative effects of any other future activities throughout the Trail's traversal of the Battle Mountain District.

Additional Resource Protection Alternative

Under this alternative, parcels recommended for deferral under the Partial Deferral Alternative would be offered for lease, subject to an additional lease notice which alerts lessees and decision-makers to avoid, mitigate, or minimize adverse effects. If the cumulative effects to recreation resources could not be avoided or mitigated—and the proposed development is not disapproved—then the cumulative effects would be similar to those predicted for the Proposed Action.

No Leasing Alternative

Under this alternative, no parcels would be offered for leasing in 2017 and the impacts described above would occur on other leased parcels in the Battle Mountain District.

4.2.14 Cumulative Effects to Visual Resources

Proposed Action

Past and present actions and RFFAs with the greatest potential to affect visual resources are the same as would most affect recreation by impacting the visual/aesthetic environment: geothermal exploration and development, mineral exploration and mining, gravel pit development and production, wind power construction, communication site construction, and road building. The cumulative impacts from these activities remain low to moderate for visual resources due to the likelihood of large distances between actions and limited surface disturbance. Most of the future activities would be on valley floors. Visual resources are mitigated on a case-by-case basis and many of the activities would be temporary in nature, with the visual contrasts essentially eliminated when reclamation (recountouring and revegetation) is completed.

Impacts to the viewshed/setting of the Pony Express National Historical Trail segment are of particular concern, as discussed under Section 3.2.13, Recreation, as oil and gas development within the Trail's viewshed has the potential to adversely impact the Trail's setting, counter to the management direction provided by 16 USC 1246(c). Currently there are two foreseeable future mining projects with potential to impact the Trail's setting (see Section 4.2.13).

Partial Deferral Alternative

Under this alternative approximately 104,668 acres, including 160 acres of Parcel 105 which encompass the Pony Express National Historic Trail and its viewshed, would be deferred from the June 2017 Lease Sale pending development of a No Surface Occupancy stipulation in the updated RMP. This would prevent the Proposed Action from contributing to cumulative impacts to the Trail's visual setting in Parcel 105. A VRM Class II designation for the Trail and its viewshed would also be proposed for the updated RMP; this would ensure high standards of visual resource management in the Trail's viewshed in the future, and reduce cumulative impacts to its visual setting throughout its traversal of the Battle Mountain District.

Additional Resource Protection Alternative

Cumulative effects to visual resources under this alternative would be similar to those of the Proposed Action.

No Leasing Alternative

Under this alternative, no parcels would be offered for leasing in 2017 and the impacts described above would occur on other leased parcels in the Battle Mountain District.

4.2.15 Cumulative Effects to Geology and Minerals

Proposed Action, Partial Deferral Alternative and Additional Resource Protection Alternative

There is little appreciable potential for the Proposed Action or Partial Deferral Alternative to have substantial cumulative impacts, combined with past and present actions and RFFAs, to geology and minerals within the Assessment Area. Based on the RFD scenario, only a small percentage of acres of constructed roads associated with exploration/development would potentially remain after 10 years. The likelihood of other resources being present at the same location is minor, although not impossible, and methods are in place to co-develop resources. Since fluid and solid minerals are non-renewable resources, the combined effects of producing either or both would result in mineral depletion. However, considering the small acreage, when combined with site-specific mitigation measures for exploration and development, cumulative impacts from the Proposed Action or Partial Deferral Alternative would not be substantial.

No Leasing Alternative

Under this alternative, no parcels would be offered for leasing in 2017 and the impacts described above would occur on other leased parcels in the Battle Mountain District.

4.2.16 Cumulative Effects to Land Use Authorizations

Proposed Action, Partial Deferral Alternative, and Additional Resource Protection Alternative

There is little appreciable potential for the Proposed Action, Partial Deferral Alternative, or Additional Resource Protection Alternative to have substantial cumulative impacts, combined with past, present and RFFAs, to other land use authorizations within the Assessment Area. Based on the RFD scenario, only a small percentage of acres of constructed roads associated with exploration/development would potentially remain after 10 years. This small acreage, when combined with site-specific mitigation measures for exploration and development, indicates that the potential cumulative impacts from the Proposed Action are negligible and would not be substantial.

No Leasing Alternative

Under this alternative, no parcels would be offered for leasing in 2017 and the impacts described above would occur on other leased parcels in the Battle Mountain District.

4.2.17 Cumulative Effects to Socioeconomic Values and Environmental Justice

Proposed Action, Partial Deferral Alternative, and Additional Resource Protection Alternative

As stated in Section 3.2.17, it is expected that the cumulative and incremental socioeconomic and environmental justice effects of the Proposed Action and Partial Deferral Alternative would be minor and beneficial. The same would be expected for cumulative and incremental socioeconomic and environmental justice effects. Specific information regarding the timing, duration, and level of employment is not available for other RFFAs that may occur within the CESA, precluding a comprehensive analysis of potential cumulative socioeconomic impacts. For any future project, additional site-specific analysis for exploration and development would be required prior to implementation and a thorough examination of socioeconomics and environmental justice would be done at that time.

No Leasing Alternative

Under this alternative, no parcels would be offered for leasing in 2017 and the impacts described above would occur on other leased parcels in the Battle Mountain District.

4.2.18 Cumulative Effects to Waste, Hazardous and Solid

Proposed Action

Other major activities potentially generating hazardous and solid waste include mining, mineral, geothermal, and existing oil and gas exploration, development and production projects. When these activities are combined with the small acreage of oil and gas activity disturbance identified in the RFD (65-100 acres), as well as any mitigation developed during additional site-specific analysis for oil and gas exploration and development, the 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. However, as discussed in Section 3.2.18, a slight risk of accidental spillage exists, and the consequences of any spill would be greater in the several parcels with extensive wetlands, springs/seeps, riparian areas, floodplains and seasonally flooded playas.

Partial Deferral Alternative

Under this alternative, approximately 104,668 acres are proposed for deferral due to sensitive wetlands, seeps and/or springs, floodplains, playas, steep slopes, or historical features. If deferred these approximately 104,668 acres would not be subject to the potential effects to these resources of any accidental spillage, as described for the Proposed Action; and would not contribute to a risk of cumulative impacts.

Additional Resource Protection Alternative

This alternative has less potential to contribute to cumulative effects than the Proposed Action because the CSU Water Resources stipulation would prevent direct or indirect contamination of all areas within 500 feet of surface waters and riparian areas; within 100 feet of ephemeral streams; and on floodplains and playas. Because it allows for an exception “when areas cannot be avoided and when engineering, best management practices, and/or design considerations are implemented to mitigate impacts to water resources,” this alternative could incur somewhat greater risk of contamination – and in turn contribute to a somewhat greater risk of cumulative effects – as compared to the Partial Deferral Alternative, depending on the mitigation measures that would be applied.

No Leasing Alternative

Under this alternative, no parcels would be offered for leasing in 2017 and the impacts described above would occur on other leased parcels in the Battle Mountain District.

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List of Preparers

The following BLM resource specialists were responsible for preparing this EA.

Table 13. List of preparers.

Resources	Specialists
Cultural Resources and Paleontology	Jonah Blustain, Steven Highland
Native American Cultural Concerns	Juan Martinez
Land Use Authorizations	Wendy Seley, Russell Webb
Recreation, Visual Resources, Wilderness Characteristics	Paul Amar
Project Lead; Geology and Minerals	Melissa Jennings
Waste, Hazardous and Solid	Richard Singer
Soils, Vegetation, Rangeland Resources	Daltrey Balmer, Dashell Burnham, Stephanie Herbert, Amanda Holmes, Robert Burdick
Noxious Weeds and Invasive, Non-native Species; Forestry	Anna O'Brien
Air Quality, Climate Change, Greenhouse Gases	Alex Jensen
Water – Surface; wetlands, riparian, floodplains	Justin Ferris
Water – Groundwater	Jim Harris
Wildlife Resources	David Davis, Greg Bjornstrom
Wild Horses and Burros	Shawna Richardson, Beth Freniere
NEPA compliance; Socioeconomic Values	Joy Fatooh

Appendices

Appendix A: List of Nominated Parcels and Reinstatement Parcel

NV-17-06-001 1876.980 Acres

T.0120N, R.0420E, 21 MDM, NV
 Sec. 001 LOTS 5-20;
 012 LOTS 1-13;
 013 LOTS 1-9,11;
 024 LOTS 1,2,7,8;
 025 LOTS 1,2,7,8;

Nye County

NV-17-06-002 1201.380 Acres

T.0120N, R.0420E, 21 MDM, NV
 Sec. 002 LOTS 5-12;
 011 N2,N2SW,NWSE,SESE;
 014 N2,W2SE;

Nye County

NV-17-06-003 1644.430 Acres

T.0110N, R.0430E, 21 MDM, NV
 Sec. 004 LOTS 5-20;
 005 LOTS 5-14;
 006 LOTS 8,9,14,15;
 009 N2,N2S2,SESE;

Nye County

NV-17-06-004 1898.000 Acres

T.0130N, R.0430E, 21 MDM, NV
 Sec. 001 LOTS 1,2;
 001 S2NE;
 001 PROT W2,SE;
 012 PROT ALL;
 013 PROT ALL;

Nye County

NV-17-06-005 1725.000 Acres

T.0130N, R.0430E, 21 MDM, NV
 Sec. 002 PROT ALL;
 003 PROT ALL;
 004 PROT NE,S2;

Nye County

NV-17-06-006 1910.000 Acres

T.0130N, R.0430E, 21 MDM, NV
 Sec. 009 PROT ALL;
 010 ALL;
 011 ALL;

Nye County

NV-17-06-007 1920.000 Acres

T.0130N, R.0430E, 21 MDM, NV

Sec. 014 ALL;

015 ALL;

023 ALL;

Nye County

NV-17-06-008 1549.000 Acres

T.0130N, R.0430E, 21 MDM, NV

Sec. 016 PROT ALL;

017 PROT E2;

020 PROT NE;

021 PROT N2,SE;

Nye County

NV-17-06-009 2372.000 Acres

T.0130N, R.0430E, 21 MDM, NV

Sec. 022 PROT ALL;

024 PROT ALL;

025 PROT N2,SE;

026 PROT N2;

027 PROT N2;

Nye County

NV-17-06-010 920.000 Acres

T.0140N, R.0430E, 21 MDM, NV

Sec. 011 E2,N2NW;

012 NWNW,S2N2,S2;

Nye County

NV-17-06-011 2529.000 Acres

T.0140N, R.0430E, 21 MDM, NV

Sec. 013 S2NE;

013 PROT W2,SE;

024 PROT ALL;

025 PROT ALL;

036 SE;

036 PROT N2,SW;

Nye County

NV-17-06-012 2491.000 Acres

T.0140N, R.0430E, 21 MDM, NV

Sec. 014 NW;

014 PROT E2,SW;

023 PROT ALL;

026 PROT ALL;

035 PROT ALL;

Nye County

NV-17-06-013 2203.580 Acres

T.0140N, R.0430E, 21 MDM, NV
 Sec. 021 LOTS 1-4;
 021 N2, SE;
 022 S2NE, SENW, S2;
 027 S2NW;
 027 PROT E2, SW;
 034 SW;
 034 PROT N2, SE;

Nye County

NV-17-06-014 2000.000 Acres

T.0140N, R.0430E, 21 MDM, NV
 Sec. 028 N2NE, W2, S2SE;
 029 ALL;
 032 N2NE, SWNE, W2, SE;
 033 E2E2, W2W2, SENW, SESW, SWSE;

Nye County

NV-17-06-015 1240.000 Acres

T.0150N, R.0430E, 21 MDM, NV
 Sec. 024 W2E2;
 025 NWNE, N2NW, SWNW, W2SW;
 026 SE;
 034 SE;
 035 N2, N2SW, SWSW, W2SE;

Nye County

NV-17-06-016 1870.940 Acres

T.0130N, R.0440E, 21 MDM, NV
 Sec. 004 LOTS 1, 2, 5-12;
 004 S2NE, SE;
 009 ALL;
 016 N2, SW, N2SE, SESE;

Nye County

NV-17-06-017 1926.160 Acres

T.0130N, R.0440E, 21 MDM, NV
 Sec. 005 LOTS 1, 2;
 005 S2NE;
 005 PROT NW, S2;
 008 PROT ALL;
 017 PROT ALL;

Nye County

NV-17-06-018 1923.000 Acres

T.0130N, R.0440E, 21 MDM, NV
 Sec. 006 LOTS 3-5;
 006 SENW;
 006 PROT NE, S2;
 007 PROT ALL;
 018 PROT ALL;

Nye County

NV-17-06-019 1920.360 Acres

T.0130N, R.0440E, 21 MDM, NV
 Sec. 019 PROT ALL;
 030 SE;
 030 PROT N2, SW;
 031 LOTS 3, 4;
 031 E2, E2SW;
 031 PROT NW;

Nye County

NV-17-06-020 1340.810 Acres

T.0130N, R.0440E, 21 MDM, NV
 Sec. 020 N2SE, SWSE;
 020 PROT N2, SW;
 029 NE, NENW, SESE;
 032 LOTS 1-6;
 032 NENW, S2NW, SW;

Nye County

NV-17-06-021 1708.620 Acres

T.0130N, R.0440E, 21 MDM, NV
 Sec. 021 ALL;
 028 NE, NWNW, S2NW, SW;
 033 LOTS 1-12;
 033 NE;

Nye County

NV-17-06-022 2066.000 Acres

T.0140N, R.0440E, 21 MDM, NV
 Sec. 017 PROT W2;
 020 PROT W2, SE;
 029 PROT ALL;
 032 PROT N2, SW;

Nye County

NV-17-06-023 2190.000 Acres

T.0140N, R.0440E, 21 MDM, NV
 Sec. 018 PROT E2, SW;
 019 PROT ALL;
 030 PROT ALL;
 031 PROT N2, SE;

Nye County

NV-17-06-024 2560.000 Acres

T.0150N, R.0440E, 21 MDM, NV
 Sec. 013 ALL;
 024 ALL;
 025 ALL;
 026 ALL;

Nye County

NV-17-06-025 1200.000 Acres

T.0150N, R.0440E, 21 MDM, NV
 Sec. 014 N2,S2SW,SE;
 023 ALL;
 Nye County

NV-17-06-026 1720.000 Acres

T.0150N, R.0440E, 21 MDM, NV
 Sec. 015 N2,SESW,SE;
 016 N2,S2SW,NWSE;
 021 NE,E2SE;
 022 NE,NENW,N2SW,SESW,SWSE;
 027 N2N2;
 Nye County

NV-17-06-027 1915.320 Acres

T.0160N, R.0440E, 21 MDM, NV
 Sec. 001 LOTS 1-4;
 001 S2N2,S2;
 012 ALL;
 013 LOTS 1-4;
 013 W2,SE;

Lander County

NV-17-06-028 1843.900 Acres

T.0160N, R.0440E, 21 MDM, NV
 Sec. 002 LOTS 1-4;
 002 S2N2,S2;
 011 ALL;
 014 NE,S2;
 023 W2NE;
 Lander County

NV-17-06-029 440.000 Acres

T.0170N, R.0440E, 21 MDM, NV
 Sec. 024 N2,N2SW,NWSE;
 Lander County

NV-17-06-030 1914.900 Acres

T.0160N, R.0450E, 21 MDM, NV
 Sec. 016 ALL;
 017 ALL;
 018 LOTS 1-4;
 018 E2,E2W2;
 Lander County

NV-17-06-031 1915.380 Acres

T.0160N, R.0450E, 21 MDM, NV

Sec. 019 LOTS 1-4;
 019 E2,E2W2;
 020 ALL;
 021 ALL;
 Lander County

NV-17-06-032 2541.020 Acres

T.0160N, R.0450E, 21 MDM, NV
 Sec. 027 LOTS 1-4;
 027 E2,E2W2;
 028 ALL;
 029 ALL;
 030 LOTS 1-4;
 030 E2,E2W2;
 Lander County

NV-17-06-033 1934.760 Acres

T.0250N, R.0510E, 21 MDM, NV
 Sec. 001 LOTS 1-4;
 001 S2N2,S2;
 002 LOTS 1-4;
 002 S2N2,S2;
 003 LOTS 1-4;
 003 S2N2,S2;
 Eureka County

NV-17-06-034 2149.590 Acres

T.0250N, R.0510E, 21 MDM, NV
 Sec. 005 LOTS 1-4;
 005 S2N2,S2;
 006 LOTS 1,2;
 006 S2NE,SE;
 007 LOTS 3-8;
 007 S2NE,E2SW,SE;
 008 ALL;
 Eureka County

NV-17-06-035 2560.000 Acres

T.0250N, R.0510E, 21 MDM, NV
 Sec. 011 ALL;
 014 ALL;
 015 ALL;
 022 ALL;
 Eureka County

NV-17-06-036 2560.000 Acres

T.0250N, R.0510E, 21 MDM, NV
 Sec. 016 ALL;
 017 ALL;
 020 ALL;
 021 ALL;
 Eureka County

NV-17-06-037 2247.340 Acres

T.0250N, R.0510E, 21 MDM, NV

Sec. 018 LOTS 1-4;
 018 E2,E2W2;
 019 LOTS 1-4;
 019 E2,E2NW,NESW;
 030 LOTS 1,4;
 030 NENE,S2NE,E2SW,SE;
 031 LOTS 1-4;
 031 E2,E2W2;

Eureka County

NV-17-06-038 2520.000 Acres

T.0250N, R.0510E, 21 MDM, NV
 Sec. 025 ALL;
 026 N2,N2SW,SESW,SE;
 027 ALL;
 028 ALL;

Eureka County

NV-17-06-039 1920.000 Acres

T.0250N, R.0510E, 21 MDM, NV
 Sec. 029 ALL;
 032 ALL;
 033 ALL;

Eureka County

NV-17-06-040 1200.000 Acres

T.0250N, R.0510E, 21 MDM, NV
 Sec. 034 SWNE,W2,SE;
 035 NE,SENW,SW,W2SE,SESE;
 036 N2N2,SENE;

Eureka County

NV-17-06-041 2560.000 Acres

T.0260N, R.0510E, 21 MDM, NV
 Sec. 026 ALL;
 027 ALL;
 034 ALL;
 036 ALL;

Eureka County

NV-17-06-042 1273.000 Acres

T.0160N, R.0520E, 21 MDM, NV
 Sec. 002 PROT ALL;
 003 PROT ALL;

Eureka County

NV-17-06-043 1280.000 Acres

T.0160N, R.0520E, 21 MDM, NV
 Sec. 025 PROT ALL;
 026 PROT ALL;

Eureka County

NV-17-06-044 1920.000 Acres

T.0160N, R.0520E, 21 MDM, NV
 Sec. 034 PROT ALL;
 035 PROT ALL;
 036 PROT ALL;

Eureka County

NV-17-06-045 1913.000 Acres

T.0170N, R.0520E, 21 MDM, NV
 Sec. 003 PROT ALL;
 004 PROT ALL;
 005 PROT ALL;

Eureka County

NV-17-06-046 1920.000 Acres

T.0170N, R.0520E, 21 MDM, NV
 Sec. 008 PROT ALL;
 009 PROT ALL;
 010 PROT ALL;

Eureka County

NV-17-06-047 2560.000 Acres

T.0170N, R.0520E, 21 MDM, NV
 Sec. 011 PROT ALL;
 014 PROT ALL;
 015 PROT ALL;
 016 PROT ALL;

Eureka County

NV-17-06-048 1913.000 Acres

T.0170N, R.0520E, 21 MDM, NV
 Sec. 028 PROT ALL;
 029 PROT ALL;
 030 PROT ALL;

Eureka County

NV-17-06-049 1280.000 Acres

T.0170N, R.0520E, 21 MDM, NV
 Sec. 033 PROT ALL;
 036 PROT ALL;

Eureka County

NV-17-06-050 1920.000 Acres

T.0210N, R.0520E, 21 MDM, NV
 Sec. 026 PROT ALL;
 035 PROT ALL;
 036 PROT ALL;

Eureka County

NV-17-06-051 870.180 Acres

T.0212N, R.0520E, 21 MDM, NV
 Sec. 003 LOTS 4,5,12;
 003 W2NW;
 004 LOTS 1-12;
 004 N2;

Eureka County

NV-17-06-052 1761.350 Acres

T.0230N, R.0520E, 21 MDM, NV
 Sec. 001 LOTS 2;
 001 S2NE, SENW, E2SW, SE;
 003 PROT ALL;

012 NE, E2NW, NESW, SE;
 013 LOTS 1, 2, 8;
 013 NE;

Eureka County

NV-17-06-053 1965.000 Acres

T.0240N, R.0520E, 21 MDM, NV
 Sec. 002 PROT ALL;
 003 PROT ALL;
 010 PROT ALL;

Eureka County

NV-17-06-054 1952.000 Acres

T.0240N, R.0520E, 21 MDM, NV
 Sec. 011 SE;
 011 PROT N2, SW;
 014 E2;
 014 PROT W2;
 015 PROT ALL;

Eureka County

NV-17-06-055 1683.000 Acres

T.0240N, R.0520E, 21 MDM, NV
 Sec. 022 PROT ALL;
 023 W2NE;
 023 PROT W2;
 027 PROT ALL;

Eureka County

NV-17-06-056 1966.000 Acres

T.0240N, R.0520E, 21 MDM, NV
 Sec. 028 PROT ALL;
 033 PROT ALL;
 034 SE;
 034 PROT N2, SW;

Eureka County

NV-17-06-057 1943.000 Acres

T.0250N, R.0520E, 21 MDM, NV
 Sec. 001 PROT ALL;
 002 PROT ALL;
 003 PROT ALL;

Eureka County

NV-17-06-058 1925.000 Acres

T.0250N, R.0520E, 21 MDM, NV
 Sec. 005 PROT ALL;
 006 PROT ALL;
 007 PROT ALL;

Eureka County

NV-17-06-059 1920.000 Acres

T.0250N, R.0520E, 21 MDM, NV
 Sec. 008 PROT ALL;
 017 PROT ALL;
 018 PROT ALL;

Eureka County

NV-17-06-060 1920.000 Acres

T.0250N, R.0520E, 21 MDM, NV
Sec. 011 PROT ALL;
014 PROT ALL;
015 PROT ALL;

Eureka County

NV-17-06-061 1859.000 Acres

T.0250N, R.0520E, 21 MDM, NV
Sec. 012 PROT ALL;
013 PROT ALL;
024 PROT ALL;

Eureka County

NV-17-06-062 1280.000 Acres

T.0250N, R.0520E, 21 MDM, NV
Sec. 019 PROT ALL;
020 PROT ALL;

Eureka County

NV-17-06-063 1280.000 Acres

T.0250N, R.0520E, 21 MDM, NV
Sec. 022 PROT ALL;
023 PROT ALL;

Eureka County

NV-17-06-064 1280.000 Acres

T.0250N, R.0520E, 21 MDM, NV
Sec. 026 PROT ALL;
035 PROT ALL;

Eureka County

NV-17-06-065 1920.000 Acres

T.0250N, R.0520E, 21 MDM, NV
Sec. 027 PROT ALL;
028 PROT ALL;
034 PROT ALL;

Eureka County

NV-17-06-066 318.730 Acres

T.0160N, R.0530E, 21 MDM, NV
Sec. 007 LOTS 4;
007 SWNE,E2SW,SE;

Eureka County

NV-17-06-067 982.250 Acres

T.0180N, R.0530E, 21 MDM, NV
Sec. 013 PROT E2,SW;
014 PROT S2SW,SE;
026 PROT W2NE,S2SW,SE;

Eureka County

NV-17-06-068 80.000 Acres

T.0210N, R.0530E, 21 MDM, NV
Sec. 003 S2SW;

Eureka County

NV-17-06-069 2458.300 Acres

T.0230N, R.0530E, 21 MDM, NV

Sec. 001 LOTS 1-4;

001 S2N2,S2;

002 LOTS 1,2;

002 S2NE;

002 PROT W2,SE;

003 PROT ALL;

004 LOTS 3,4;

004 S2NW;

004 PROT E2,SW;

Eureka County

NV-17-06-070 2532.270 Acres

T.0230N, R.0530E, 21 MDM, NV

Sec. 005 LOTS 1-4;

005 S2N2,S2;

006 LOTS 1-7;

006 S2NE,SENW,E2SW,SE;

007 LOTS 1-4;

007 E2,E2W2;

008 ALL;

Eureka County

NV-17-06-071 2551.000 Acres

T.0230N, R.0530E, 21 MDM, NV

Sec. 009 SW;

009 PROT E2,NW;

010 PROT ALL;

011 SE;

011 PROT N2,SW;

012 NENE,W2NE,W2,W2SE,SESE;

Eureka County

NV-17-06-072 2228.480 Acres

T.0230N, R.0530E, 21 MDM, NV

Sec. 013 N2N2;

014 N2;

015 N2;

016 N2;

017 N2,SW;

018 LOTS 1-4;

018 E2,E2W2;

Eureka County

NV-17-06-073 2135.400 Acres

T.0240N, R.0530E, 21 MDM, NV

Sec. 001 PROT ALL;

002 PROT ALL;

003 PROT ALL;

004 LOTS 3,4;

004 S2NW;

004 PROT E2,SW;

Eureka County

NV-17-06-074 2520.490 Acres

T.0240N, R.0530E, 21 MDM, NV

Sec. 005 LOTS 1-4;

005 S2N2,S2;

007 LOTS 4;

007 SENE,E2SW,SE;

008 ALL;

017 ALL;

018 NE,E2NW,NESE;

Eureka County

NV-17-06-075 2418.000 Acres

T.0240N, R.0530E, 21 MDM, NV

Sec. 009 PROT ALL;

010 PROT ALL;

011 PROT ALL;

012 PROT ALL;

Eureka County

NV-17-06-076 2453.000 Acres

T.0240N, R.0530E, 21 MDM, NV

Sec. 013 PROT ALL;

014 PROT ALL;

015 PROT ALL;

016 PROT ALL;

Eureka County

NV-17-06-077 2365.680 Acres

T.0240N, R.0530E, 21 MDM, NV

Sec. 019 E2E2;

020 ALL;

029 E2NE,NESE,S2SW;

030 E2SW,S2SE;

031 LOTS 1-4;

031 E2,E2W2;

032 S2NE,NW,S2;

Eureka County

NV-17-06-078 2459.000 Acres

T.0240N, R.0530E, 21 MDM, NV

Sec. 021 PROT ALL;

022 PROT ALL;

023 PROT ALL;

024 PROT ALL;

Eureka County

NV-17-06-079 2475.000 Acres

T.0240N, R.0530E, 21 MDM, NV

Sec. 025 PROT ALL;

026 PROT ALL;

027 PROT ALL;

028 PROT ALL;

Eureka County

NV-17-06-080 1290.000 Acres

T.0240N, R.0530E, 21 MDM, NV

Sec. 033 SW;
 033 PROT N2,SE;
 034 PROT ALL;
 Eureka County

NV-17-06-081 1286.000 Acres

T.0240N, R.0530E, 21 MDM, NV
 Sec. 035 PROT ALL;
 036 SE;
 036 PROT N2,SW;
 Eureka County

NV-17-06-082 2133.000 Acres

T.0250N, R.0530E, 21 MDM, NV
 Sec. 001 PROT ALL;
 002 PROT ALL;
 003 PROT ALL;
 004 SESW;
 004 PROT E2;
 Eureka County

NV-17-06-083 1188.470 Acres

T.0250N, R.0530E, 21 MDM, NV
 Sec. 018 NWNE,E2NW,NESW;
 019 LOTS 1-3;
 006 LOTS 3-7;
 006 SENW,E2SW,SWSE;
 007 LOTS 1-4;
 007 W2E2,E2W2;
 018 LOTS 1-4;
 Eureka County

NV-17-06-084 2350.000 Acres

T.0250N, R.0530E, 21 MDM, NV
 Sec. 009 E2NW,NESW;
 009 PROT E2;
 010 PROT ALL;
 011 PROT ALL;
 012 PROT ALL;
 Eureka County

NV-17-06-085 2280.000 Acres

T.0250N, R.0530E, 21 MDM, NV
 Sec. 013 PROT ALL;
 014 PROT ALL;
 015 PROT ALL;
 016 SESW;
 016 PROT E2;
 Eureka County

NV-17-06-086 2400.000 Acres

T.0250N, R.0530E, 21 MDM, NV
 Sec. 021 E2W2;
 021 PROT E2;
 022 PROT ALL;
 023 PROT ALL;
 024 PROT ALL;

Eureka County

NV-17-06-087 2560.000 Acres

T.0250N, R.0530E, 21 MDM, NV
 Sec. 025 PROT ALL;
 026 PROT ALL;
 027 PROT ALL;
 028 W2;
 028 PROT E2;

Eureka County

NV-17-06-088 1901.000 Acres

T.0250N, R.0530E, 21 MDM, NV
 Sec. 029 E2SE, SWSE;
 032 E2, E2W2;
 033 W2;
 033 PROT E2;
 034 PROT ALL;

Eureka County

NV-17-06-089 1283.000 Acres

T.0250N, R.0530E, 21 MDM, NV
 Sec. 035 PROT ALL;
 036 PROT ALL;

Eureka County

NV-17-06-090 1496.690 Acres

T.0180N, R.0540E, 21 MDM, NV
 Sec. 007 LOTS 4;
 017 W2SW, SESW, SWSE;
 018 LOTS 1, 3, 4;
 018 S2NE, NENW, NESE, SESW;
 019 LOTS 1-4;
 019 NENW, E2SW, S2SE;
 020 E2, S2SW;

Eureka County

NV-17-06-091 2219.220 Acres

T.0180N, R.0540E, 21 MDM, NV
 Sec. 029 ALL;
 030 LOTS 1-4;
 030 E2, E2W2;
 031 LOTS 1-7;
 031 NE, E2NW, NESW, N2SE;
 032 N2, NWSW;

Eureka County

NV-17-06-092 2099.000 Acres

T.0210N, R.0540E, 21 MDM, NV
 Sec. 001 PROT ALL;
 002 PROT ALL;
 010 E2E2;
 011 PROT ALL;

Eureka County

NV-17-06-093 2054.000 Acres

T.0210N, R.0540E, 21 MDM, NV

Sec. 012 PROT ALL;
 013 PROT ALL;
 014 PROT ALL;
 015 E2E2, SESW, SWSE;

Eureka County

NV-17-06-094 1840.000 Acres

T.0210N, R.0540E, 21 MDM, NV

Sec. 022 E2, E2W2;
 023 N2NE, SWNE, NW;
 024 NE, N2NW, SENW;
 027 NE, E2W2, NWSE;
 034 NENW, S2NW, SW;

Eureka County

NV-17-06-095 1025.940 Acres

T.0212N, R.0540E, 21 MDM, NV

Sec. 035 LOTS 1-3;
 035 S2NE, SENW, S2;
 036 LOTS 1-3;
 036 S2NE, SENW, S2;

Eureka County

NV-17-06-096 1920.840 Acres

T.0220N, R.0540E, 21 MDM, NV

Sec. 001 LOTS 1-4;
 001 S2N2, S2;
 012 ALL;
 013 ALL;

Eureka County

NV-17-06-097 2190.000 Acres

T.0240N, R.0540E, 21 MDM, NV

Sec. 001 PROT ALL;
 002 PROT ALL;
 011 PROT ALL;
 012 PROT ALL;

Eureka County

NV-17-06-098 1925.070 Acres

T.0240N, R.0540E, 21 MDM, NV

Sec. 004 LOTS 4;
 004 SWNW, SW;
 005 LOTS 1-4;
 005 S2N2, S2;
 008 ALL;
 009 NWNE, W2, SWSE;

Eureka County

NV-17-06-099 2546.820 Acres

T.0240N, R.0540E, 21 MDM, NV

Sec. 006 LOTS 1-7;
 006 S2NE, SENW, W2SW, SE;
 007 LOTS 1-4;
 007 E2, E2W2;
 017 ALL;
 018 LOTS 1-4;

018 E2,E2W2;
Eureka County

NV-17-06-100 1791.000 Acres

T.0240N, R.0540E, 21 MDM, NV
Sec. 013 PROT ALL;
014 PROT ALL;
024 PROT ALL;
Eureka County

NV-17-06-101 1922.960 Acres

T.0240N, R.0540E, 21 MDM, NV
Sec. 019 LOTS 1-4;
019 E2,E2W2;
020 ALL;
029 ALL;
Eureka County

Formerly Lease No.

NV-17-06-102 1920.000 Acres

T.0240N, R.0540E, 21 MDM, NV
Sec. 028 ALL;
032 ALL;
033 ALL;
Eureka County

NV-17-06-103 1291.080 Acres

T.0240N, R.0540E, 21 MDM, NV
Sec. 030 LOTS 1-4;
030 E2,E2W2;
031 LOTS 1-4;
031 E2,E2W2;
Eureka County

NV-17-06-104 610.000 Acres

T.0200N, R.0550E, 21 MDM, NV
Sec. 019 PROT ALL;
Eureka County

NV-17-06-105 1958.250 Acres

T.0240N, R.0550E, 21 MDM, NV
Sec. 007 PROT W2;
018 PROT W2;
019 PROT W2;
030 PROT W2,SE;
031 PROT ALL;
Eureka County

NV-17-06-106 640.000 Acres

T.0070N, R.0560E, 21 MDM, NV
Sec. 021 ALL;
Nye County

Number of Parcels - 106

Total Acreage - 195,731.94

Total number of Parcels with Presale Offers - 0

Parcel Number of Parcels with Presale Offers - 0

Total Acreage with Presale Offers - 0

Proposed Reinstatement Parcel

NVN77856 1280.000 Acres

T. 0070N, R. 0570E, 21 MDM, NV

Sec. 28 All;

Sec. 29 All;

Nye County

Appendix B: Stipulations and Lease Notices

This appendix identifies existing stipulations and Lease Notices that would be applied to specific parcels or parts of parcels under all three action alternatives: the Proposed Action; Partial Deferral Alternative; and Additional Resource Protection Alternative.

Stipulations are restrictions that are included in the current applicable land use plan – the Tonopah RMP or Shoshone-Eureka RMP – as amended by the GRSG Plan Amendment (see Section 1.3 of this EA).

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

See Appendix C for new stipulations proposed under the Partial Deferral Alternative (C.1) or the Additional Resource Protection Alternative (C.2).

**Stipulation – Mule Deer Seasonal Habitat
(#NV-B-02-A-TL, Tonopah Field Office)**

Stipulation: Timing Limitation (TL) -No surface activity within Mule Deer winter range from January 15 through May 15. The boundaries of the stipulated area may be modified if the Authorized Officer, in consultation with Nevada Department of Wildlife, determines that portions of the area no longer contain the winter mule deer habitat or that the proposed action would not affect the species and habitat. The dates for the timing restriction may also be modified by the Authorized Officer if new information indicates the dates are not valid for the leasehold. Any modification authorized by this stipulation is subject to 43 C.F.R. 3101.1-4, including provisions requiring public review for issues of major public concern, or substantial modifications.

Parcel #	Legal Land Description
NV-17-06-001	ALL LANDS
NV-17-06-002	ALL LANDS

[Note: This stipulation was inadvertently identified in the preliminary EA as applying to mule deer migration corridors, December 1 through May 1. This has been corrected to conform with the Tonopah RMP.]

**Lease Notice – Wild Horse and Burro
(#NV-B-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
NV-17-06-30	T.0160N, R.0450E, 21 MDM, NV Sec. 016 ALL; 017 E2SE, SWSE, SENE;
NV-17-06-31	T.0160N, R.0450E, 21 MDM, NV Sec. 020 E2, SESW; 021 ALL;
NV-17-06-32	T.0160N, R.0450E, 21 MDM, NV Sec. 027 LOTS 1-4; 027 E2,E2W2; 028 ALL; 029 E2, E2W2;
NV-17-06-42	ALL LANDS
NV-17-06-43	T.0160N, R.0520E, 21 MDM, NV Sec. 025 PROT W2, W2E2; 026 PROT ALL;
NV-17-06-44	T.0160N, R.0520E, 21 MDM, NV Sec. 034 PROT ALL; 035 PROT ALL; 036 PROT W2, W2E2;
NV-17-06-45 through 51	ALL LANDS
NV-17-06-90	T.0180N, R.0540E, 21 MDM, NV Sec. 007 LOTS 4; 017 W2SW 018 LOTS 1,3,4; 018 NENW, NESE, SESW; 019 LOTS 1-4; 019 NENW, E2SW,S2SE; 020 SWSW;
NV-17-06-91	T.0180N, R.0540E, 21 MDM, NV Sec. 029 NW, W2SW; 030 LOTS 1-4; 030 E2,E2W2; 031 LOTS 1-7; 031 NE,E2NW,NESW,N2SE; 032 NENW, SWNW, NWSW;
NV-17-06-92 through 98	ALL LANDS
NV-17-06-99	T.0240N, R.0540E, 21 MDM, NV Sec. 006 LOTS 1-3; 006 S2NE,SE,SENW,W2SW,SE; 007 E2,E2W2; 017 ALL; 018 E2,E2W2;
NV-17-06-100 through 104	ALL LANDS

**Lease Notice - T&E, Sensitive and Special Status Species
(#NV-B-06-A-LN)**

Endangered Species Act Section 7 Consultation Lease Notice:

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.

See Appendix D for the current Battle Mountain District Special Status Species List.

Parcel #	Legal Land Description
ALL PARCELS	ALL LANDS
NVN77856	ALL LANDS

**Lease Notice – Timing Limitation – Migratory Birds
(#NV-B-06-C-LN)**

Surface-disturbing activities during the migratory bird nesting season (March 1 to July 31) may be restricted in order to avoid potential violation of the Migratory Bird Treaty Act. Appropriate inventories of migratory birds shall be conducted during analysis of actual site development. If active nests are located, or if other evidence of nesting is observed (mating pairs, territorial defense, carrying of nesting material, transporting of food), the proponent shall coordinate with BLM to establish appropriate protection measures for the nesting sites. Protection measures may include avoidance or restricting or excluding development in certain areas until nests and nesting birds will not be disturbed. After July 31, no additional avian surveys should be required until the following year.

Parcel #	Legal Land Description
NV-17-06-001 Through NV-17-06-106	ALL LANDS
NVN77856	ALL LANDS

Lease Notice – Cultural Resources and Tribal Consultation
(#NV-B-07-A-LN)

Cultural Resources and Tribal Consultation Notice:

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 NHP A 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.

Parcel #	Legal Land Description
NV-17-06-001 Through NV-17-06-106	ALL LANDS
NVN77856	ALL

**Lease Notice - Fossils (PFYC-2 and 3)
(#NV-B-08-A-LN)**

This area has low or moderate potential for vertebrate paleontological resources. Inventory and/or on-site monitoring during disturbance or spot checking may be required. Operations within 250 feet of 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.

Parcel #	Legal Land Description
NV-17-06-003 Through NV-17-06-014	ALL LANDS
NV-17-06-016 Through NV-17-06-026	ALL LANDS
NV-17-06-030 Through NV-17-06-034	ALL LANDS
NV-17-06-036 Through NV-17-06-039	ALL LANDS
NV-17-06-041	ALL LANDS
NV-17-06-043 Through NV-17-06-043	ALL LANDS
NV-17-06-048 Through NV-17-06-049	ALL LANDS
NV-17-06-051 Through NV-17-06-052	ALL LANDS
NV-17-06-057	ALL LANDS
NV-17-06-060 Through NV-17-06-063	ALL LANDS
NV-17-06-065	ALL LANDS
NV-17-06-067	ALL LANDS
NV-17-06-069 Through NV-17-06-071	ALL LANDS
NV-17-06-073 Through NV-17-06-074	ALL LANDS
NV-17-06-081 Through NV-17-06-085	ALL LANDS
NV-17-06-088	ALL LANDS
NV-17-06-090	ALL LANDS
NV-17-06-092	ALL LANDS

Through NV-17-06-095	
NV-17-06-098 Through NV-17-06-099	ALL LANDS
NV-17-06-101	ALL LANDS
NV-17-06-103 Through NV-17-06-105	ALL LANDS

**Lease Notice - Fossils (PFYC-4)
(#NV-B-08-C-LN)**

This area has high and very high potential for paleontological resources. This land is underlain by geologic units that have been documented to contain a high occurrence of fossils, which may consist of scientifically significant paleontological resources protected by Public Law 111-11, Paleontological Resources Preservation Act. A field survey by a qualified paleontologist, and at the lessee's expense, will be required prior to surface-disturbing activities. If significant paleontological resources of scientific or educational importance are discovered, they will require avoidance or data recovery prior to their disturbance. On-site monitoring may be necessary during construction activities.

Parcel #	Legal Land Description
NV-17-06-033	T.0250N, R.0510E, 21 MDM, NV Sec. 001 LOT 1; 001 SENE;
NV-17-06-038	T.0250N, R.0510E, 21 MDM, NV Sec. 025 W2W2, NENW; 026 SENE,NESE;
NV-17-06-040	T.0250N, R.0510E, 21 MDM, NV Sec. 034 S2SE,SESW; 035 SESE; 036 NWNW
NV-17-06-041	T.0260N, R.0510E, 21 MDM, NV Sec. 036 N2SE,NESW;
NV-17-06-058	T.0250N, R.0520E, 21 MDM, NV Sec. 006 PROT W2; 007 W2;
NV-17-06-059	T.0250N, R.0520E, 21 MDM, NV Sec. 018 PROT W2NW;
NV-17-06-094	T.0210N, R.0540E, 21 MDM, NV Sec. 023 SWNE; 024 W2NE,E2NW,NWNW; 027 SENE,NWSE,SESW; 034 E2NW;
NV-17-06-104	T.0200N, R.0550E, 21 MDM, NV Sec. 019 PROT SWNW,NWSW;

**Lease Notice - NDOT Mineral Pits
(#NV-B-12-A-LN)**

The lessee accepts this lease subject to the right of the State of Nevada to remove road building material from the land embraced in Material Site No. (See below) and agrees that its operations will not interfere with the material operations of the Department of Transportation.

Parcel #	Legal Land Description
NV-17-06-033	T.0250N, R.0510E, 21 MDM, NV Sec. 003 SWNW,NWSW,W2SEW,W2NESW
NV-17-06-033	T.0250N, R.051E, 21 MDM, NV Sec. 003 SWSE
NV-17-06-038	T.0260N, R.051E, 21 MDM, NV Sec. 026 SENWSW,SWNESW,NWSES
NV-17-06-041	T.0260N, R.051E, 21 MDM, NV Sec. 034 N2SESE,NESE

**Lease Notice - Saleable Minerals: Community Pits
(#NV-B-12-B-LN)**

The lessee accepts this lease subject to the right of individuals, authorized by Bureau of Land Management District Office, to remove sand and gravel from the land embraced in Community Pit No. (see below) The lessee agrees that its operations will not interfere with the use of the pit(s) by these individuals.

Parcel #	Legal Land Description
NV-17-06-001	T.0120N, R.0420E, 21 MDM, NV Sec. 013 Lot 8 & Lot 13

**Lease Notice - Mining Claims
(#NV-B-13-A-LN)**

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.

Parcel #	Legal Land Description
NV-17-06-001 through 106	ALL LANDS
NVN77856	ALL LANDS

**Lease Notice - Fire
(#NV-B-15-A-LN)**

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 Central Nevada Interagency Dispatch Center (CNIDC) at (775) 623-3444. Helpful information to reported 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 May through September, the operator must contact the BLM Battle Mountain District Office, Division of Fire and Aviation at (775 635-4000) 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.

Parcel #	Legal Land Description
NV-17-06-001 Through NV-17-06-106	ALL LANDS
NVN77856	ALL LANDS

**Stipulation – Sage-Grouse Habitat, PHMA
(#NV-B-16-A-NSO)**

Stipulation: No Surface Occupancy. Priority Habitat Management Areas (PHMA) outside of Sagebrush Focal Areas (SFA)-Manage oil and gas resources in Nevada as No Surface Occupancy (NSO), with two exceptions.

Objective [Purpose]: To protect Greater Sage Grouse (GRSG) in PHMA.

Exception: The Authorized Officer may grant an exception to an oil and gas lease NSO Stipulation only where the proposed action is as one of the following:

- (i) Would not have direct, indirect, or cumulative effects on GRSG or its habitat
- (ii) Is proposed to be undertaken as an alternative to a similar action occurring on a nearby parcel and would provide a clear net conservation gain to GRSG and its habitat Exceptions based on conservation gain (ii) may only be considered in (a)PHMA of mixed ownership where federal minerals underlie less than fifty percent of the total surface or (b) areas of the public lands where the proposed exception is an alternative to an action occurring on a nearby parcel subject to a valid federal oil and gas lease existing as of the date of ARMPA. Exceptions based on conservation gain must also include such measures as enforceable institutional controls and buffers, sufficient to allow the BLM to conclude that such benefits would endure for the duration of the proposed action’s impacts. Any exceptions to this lease stipulation may be approved by the Authorized Officer only with the concurrence of the State Director. The Authorized Officer may not grant an exception unless the applicable state wildlife agency, the USFWS, and the BLM unanimously find that the proposed action satisfies (i) or (ii). Such finding initially would be made by a team of one field biologist or other GRSG expert from each respective agency. In the event the initial finding were not unanimous, the finding may be elevated to the appropriate BLM State Director, USFWS State Ecological Services Director, and state Wildlife agency head for final resolution. In the event their findings were not unanimous, the exception would not be granted. Approved exceptions would be made publicly available at least quarterly.

Modification: None.

Waiver: None

Parcel #	Legal Land Description
NV-17-06-034	ALL LANDS
NV-17-06-035	T.0250N, R.0510E, 21 MDM, NV Sec. 015, 022
NV-17-06-036 through 040	ALL LANDS
NV-17-06-041	T.0260N, R.0510E, 21 MDM, NV Sec. 026, 027
NV-17-06-059	T.0250N, R.0520E, 21 MDM, NV Sec. 017 PROT ALL 018 PROT ALL
NV-17-06-062	ALL LANDS

**Stipulation – Sage-Grouse Habitat, GHMA, Near Leks
(#NV-B-16-B-TL)**

Stipulation: Timing Limitation. In General Management Habitat Areas (GHMA) No Surface Activity would be allowed within 4.0 miles of active or pending Greater Sage-Grouse (GRSG) leks from March 1 through May 15.

Objective [Purpose]: To protect GRSG lekking habitat.

Exception: The Authorized Officer may grant an exception where an environmental review and consultation with the Nevada Department of Wildlife & Sagebrush Ecosystem Technical Team determines that the action, as proposed or otherwise restricted, does not adversely affect GRSG or its habitat. An exception may also be granted if the proponent, the BLM, and the appropriate state agency negotiate mitigation that would provide a clear net conservation gain to GRSG and its habitat.

Modification: The Authorized Officer may modify the size and shape of the restricted area or the period of limitation where an environmental review and consultation with the Nevada Department of Wildlife & Sagebrush Ecosystem Technical Team determines that the action, as proposed or otherwise restricted, does not adversely affect GRSG or its habitat.

Waiver: The Authorized Officer may waive the stipulation where an environmental review and consultation with the Nevada Department of Wildlife & Sagebrush Ecosystem Technical Team determines that the described lands do not contain GRSG or suitable habitat or are otherwise incapable of serving the requirements of GRSG and therefore no longer warrant consideration as a component necessary for their protection.

Parcel #	Legal Land Description
NV-17-06-029	T.0170N, R.0440E, 21 MDM, NV, Sec. 024, ¼ NWNW, NENW, NWNE, NENE, SWNW, SENW, SWNE, SENE, NWSW, NESW
NV-17-06-034	T.0250N, R.0510E, 21 MDM, NV, Sec. 007, 008
NV-17-06-035	T.0250N, R.0510E, 21 MDM, NV, Sec. 022
NV-17-06-036 through 040	ALL LANDS

**Stipulation – Sage-Grouse Habitat, GHMA, Winter
(#NV-B-16-C-TL)**

Stipulation: Timing Limitation. No Surface Occupancy (NSO) would be allowed in Greater Sage-Grouse (GRSG) General Management Habitat Areas (GHMA) winter habitat from November 1 through February 28.

Objective [Purpose]: To protect GRSG winter habitat.

Exception: The Authorized Officer may grant an exception where an environmental review and consultation with the Nevada Department of Wildlife & Sagebrush Ecosystem Technical Team determines that the action, as proposed or otherwise restricted, does not adversely affect GRSG or its habitat. An exception may also be granted if the proponent, the BLM, and the appropriate state agency negotiate mitigation that would provide a clear net conservation gain to GRSG and its habitat.

Modification: The Authorized Officer may modify the size and shape of the restricted area or the period of limitation where an environmental review and consultation with the Nevada Department of Wildlife & Sagebrush Ecosystem Technical Team determines that the action, as proposed or otherwise restricted, does not adversely affect GRSG or its habitat.

Waiver: The Authorized Officer may waive the stipulation where an environmental review and consultation with the Nevada Department of Wildlife & Sagebrush Ecosystem Technical Team determines that the described lands do not contain GRSG or suitable habitat or are otherwise incapable of serving the requirements of GRSG and therefore no longer warrant consideration as a component necessary for their protection.

Parcel #	Legal Land Description
NV-17-06-002	T.0120N, R.0420E, 21 MDM, NV, Sec. 002, ¼ L2, L7, L10, L11; Sec. 011
NV-17-06-014	T.0140N, R.0430E, 21 MDM, NV Sec. 029, NW, SW
NV-17-06-015	T.0150N, R.0430E, 21 MDM, NV Sec. 026, NWSE; Sec. 034, NWSE, SWSE, NESE
NV-17-06-029	T.0170N, R.0440E, 21 MDM, NV Sec. 024 NW, NE, NWSW
NV-17-06-034 through 041	ALL LANDS
NV-17-06-059	T.0250N, R.0510E, 21 MDM, NV, Sec. 017, 018
NV-17-06-062	ALL LANDS

**Stipulation – Sage-Grouse Habitat, GHMA, Early Brood-Rearing
(#NV-B-16-D-TL)**

Stipulation: Timing Limitation. No Surface Occupancy (NSO) would be allowed in Greater Sage-Grouse (GRSG) early brood-rearing habitat from May 15 through June 15.

Objective [Purpose]: To provide seasonal protection to GRSG early brood-rearing habitat in General Management Habitat Areas (GHMA).

Exception: The Authorized Officer may grant an exception where an environmental review and consultation with the Nevada Department of Wildlife & Sagebrush Ecosystem Technical Team determines that the action, as proposed or otherwise restricted, does not adversely affect GRSG or its habitat. An exception may also be granted if the proponent, the BLM, and the appropriate state agency negotiate mitigation that would provide a clear net conservation gain to GRSG and its habitat.

Modification: The Authorized Officer may modify the size and shape of the restricted area or the period of limitation where an environmental review and consultation with the Nevada Department of Wildlife & Sagebrush Ecosystem Technical Team determines that the action, as proposed or otherwise restricted, does not adversely affect GRSG or its habitat.

Waiver: The Authorized Officer may waive the stipulation where an environmental review and consultation with the Nevada Department of Wildlife & Sagebrush Ecosystem Technical Team determines that the described lands do not contain GRSG or suitable habitat or are otherwise incapable of serving the requirements of GRSG and therefore no longer warrant consideration as a component necessary for their protection.

Parcel #	Legal Land Description
NV-17-06-002	T.0120N, R.0420E, 21 MDM, NV Sec. 002 Lots 5-7, Lots 10-11; 011 ALL
NV-17-06-014	T.0140N, R.0430E, 21 MDM, NV Sec. 029, NW, SW
NV-17-06-015	T.0150N, R.0430E, 21 MDM, NV Sec. 026, NWSE; 034, NWSE, SWSE, NESE
NV-17-06-029	T.0170N, R.0440E, 21 MDM, NV Sec. 024 NW, NE, NWSW
NV-17-06-034	ALL LANDS
NV-17-06-035 through 041	ALL LANDS
NV-17-06-059	T.0250N, R.0510E, 21 MDM, NV, Sec. 017, 018
NV-17-06-062	ALL LANDS

**Stipulation – Sage-Grouse Habitat, GHMA, Late Brood-Rearing
(#NV-B-16-E-TL)**

Stipulation: Timing Limitation. No Surface Occupancy (NSO) would be allowed in Greater Sage-Grouse (GRSG) late brood-rearing habitat from June 15 through September 15 in GHMA.

Objective [Purpose]: To provide seasonal protection to GRSG late brood-rearing habitat.

Exception: The Authorized Officer may grant an exception where an environmental review and consultation with the Nevada Department of Wildlife & Sagebrush Ecosystem Technical Team determines that the action, as proposed or otherwise restricted, does not adversely affect GRSG or its habitat. An exception may also be granted if the proponent, the BLM, and the appropriate state agency negotiate mitigation that would provide a clear net conservation gain to GRSG and its habitat.

Modification: The Authorized Officer may modify the size and shape of the restricted area or the period of limitation where an environmental review and consultation with the Nevada Department of Wildlife & Sagebrush Ecosystem Technical Team determines that the action, as proposed or otherwise restricted, does not adversely affect GRSG or its habitat.

Waiver: The Authorized Officer may waive the stipulation where an environmental review and consultation with the Nevada Department of Wildlife & Sagebrush Ecosystem Technical Team determines that the described lands do not contain GRSG or suitable habitat or are otherwise incapable of serving the requirements of GRSG and therefore no longer warrant consideration as a component necessary for their protection.

Parcel #	Legal Land Description
NV-17-06-002	T.0140N, R.0430E, 21 MDM, NV Sec. 029, NW, SW
NV-17-06-015	T.0150N, R.0430E, 21 MDM, NV Sec. 026, NWSE; Sec. 034, NWSE, SWSE, NESE
NV-17-06-029	T.0170N, R.0440E, 21 MDM, NV Sec. 024 NW, NE, NWSW
NV-17-06-034 through 41	ALL LANDS
NV-17-06-059	T.0250N, R.0510E, 21 MDM, NV, Sec. 017, 018
NV-17-06-062	ALL LANDS

**Stipulation – Sage-Grouse Habitat, Noise Near Leks
(#NV-B-16-F-CSU)**

Stipulation: Control Surface Use (CSU). Authorizations/permits would limit noise from discretionary activities (during construction, operation, or maintenance) to not exceed 10 decibels above ambient sound levels at least 0.25 miles from active and pending leks from 2 hours before to 2 hours after sunrise and sunset during the breeding season from March 1 to May 15.

Objective [Purpose]: To protect Greater Sage Grouse (GRSG) lek sites by implementing noise restrictions near leks in General Management Habitat Areas (GHMA).

Exception: None

Modification: None

Waiver: None

Parcel #	Legal Land Description
NV-17-06-037	T.0250N, R.0510E, 21 MDM, NV, Sec. 031, 1/4SWSE; 1/4SESE
NV-17-06-039	T.0250N, R.0510E, 21 MDM, NV, Sec. 032. 1/4SWSW

**Stipulation – Sage-Grouse Habitat, GHMA, Lek Buffer Distances
(#NV-B-16-G-CSU)**

Stipulation: Control Surface Use (CSU). In General Management Habitat Areas (GHMA), the BLM will apply lek buffer distances specified as the lower end of the interpreted range in the report unless justifiable departures are determined to be appropriate (see below). The lower end of the interpreted range of the lek buffer distances is as follows:

- Linear features (roads) within 3.1 miles of leks
- Infrastructure related to energy development within 3.1 miles of leks
- Tall structures (e.g., communication or transmission towers and transmission lines) within 2 miles of leks
- Low structures (e.g., fences and rangeland structures) within 1.2 miles of leks
- Surface disturbance (continuing human activities that alter or remove the natural vegetation) within 3.1 miles of leks
- Noise and related disruptive activities, including those that do not result in habitat loss (e.g., motorized recreational events) at least 0.25 miles from leks.

Objective [Purpose]: To protect GRSG leks.

Exception: Justifiable departures to decrease or increase from these distances, based on local data, best available science, landscape features, and other existing protections (e.g., land use allocations and state regulations) may be appropriate for determining activity impacts. The USGS report recognized “that because of variation in populations, habitats, development patterns, social context, and other factors, for a particular disturbance type, there is no single distance that is an appropriate buffer for all populations and habitats across the sage-grouse range.” The USGS report also states that “various protection measures have been developed and implemented... [which have] the ability (alone or in concert with others) to protect important habitats, sustain populations, and support multiple-use demands for public lands.” All variations in lek buffer distances will require appropriate analysis and disclosure as part of activity authorization.

Modification: None

Waiver: None

Parcel #	Legal Land Description
(0.25 mi) NV-17-06-037	T.0250N, R.0510E, 21 MDM, NV, Sec. 031, 1/4SWSE; 1/4SESE
(0.25 mi) NV-17-06-039	T.0250N, R.0510E, 21 MDM, NV, Sec. 032. 1/4SWSW
(1.2 mi) NV-17-06-037	T.0250N, R.0510E, 21 MDM, NV, Sec. 031
(1.2 mi) NV-17-06-039	T.0250N, R.0510E, 21 MDM, NV, Sec. 032
(3.1 mi) NV-17-06-036	T.0250N, R.0510E, 21 MDM, NV, Sec. 020, 021
(3.1 mi) NV-17-06-037	ALL LANDS
(3.1 mi) NV-17-06-038	T.0250N, R.0510E, 21 MDM, NV, Sec. 026. 027
(3.1 mi) NV-17-06-039	ALL LANDS
(3.1 mi) NV-17-06-040	ALL LANDS
(3.1 mi) NV-17-06-062	ALL LANDS

Appendix C: Deferrals and/or Stipulations Proposed Under Partial Deferral Alternative and Additional Resource Protection Alternative

Section C.1 of this appendix identifies deferrals and new stipulations proposed under the Partial Deferral Alternative, and the parcels to which they would apply.

Section C.2 of this appendix identifies new stipulations proposed under the Additional Resource Protection Alternative and the parcels to which they would apply.

C.1. Partial Deferral Alternative

Parcels or parts of parcels are proposed for deferral under the Partial Deferral Alternative based on resource concerns and land use conflicts that cannot be resolved via stipulations in the existing RMPs as amended. For each proposed deferral, the ID Team recommended a new stipulation or other measure to address the issue in an upcoming revised RMP. Under these alternatives, parcels or parts of parcels would be withheld from lease sale until the RMP is updated to include the new stipulations, or until the resource concerns are resolved by other means.

The proposed stipulations, along with the standardized system for numbering them, are derived from a list provided by the BLM Nevada State Office as suggested verbiage for fluid minerals stipulations to be included in updated RMPs with the goal of achieving consistency across the state.

The stipulations proposed at this time represent the Battle Mountain District's current intentions for addressing the resource concerns. All proposed future stipulations would be subject to comprehensive NEPA analysis, including public review, as part of the Environmental Impact Statement process that is required for developing an RMP.

In brief, the proposed stipulations for the Partial Deferral Alternative are:

- No Surface Occupancy for sites eligible for National Register of Historic Places (NV-B-07-C-NSO)
- No Surface Occupancy for National Historic Trails (NV-B-07-D-NSO)
- No Surface Occupancy for water bodies, riparian and wetland areas (NV-B-10-A-NSO)
- Controlled Surface Use for a 500 ft. riparian-wetland habitat buffer (NV-B-10-B-CSU)
- No Surface Occupancy for 100-year floodplains (NV-B-10-C-NSO)
- No Surface Occupancy for seasonally flooded playas (NV-B-10-D-NSO)
- No Surface Occupancy for certain slopes >40% (NV-B-11-B-NSO)

The proposed stipulations are presented below in full, followed by a table indicating which parcels or parts of parcels are proposed for deferral pending development of the new stipulations via the RMP process.

**PROPOSED Stipulation: Sites Eligible for National Register of Historic Places
(Proposed #NV-B-07-C-NSO)**

Stipulation: No Surface Occupancy (NSO) within National Register-eligible Properties and Districts. Prior to surface disturbance, a survey would be required confirm the Area of Potential Effect of National Register-eligible Properties (NRHP) and Districts.

Objective [Purpose]: To protect National Register-eligible Properties and Districts setting and visual integrity critical to their eligibility.

Exception: The Authorized Officer may grant an exception if the BLM determines, in consultation with the Nevada SHPO (if required by the Statewide Protocol Agreement), that the action, as proposed or otherwise restricted, will not adversely affect National Register-listed Properties and Districts, National Historic Landmarks, and Traditional Cultural Properties listed or eligible for the NRHP. An exception may also be granted if BLM, in consultation with the Nevada State Historic Preservation Office (SHPO), negotiate mitigation that would satisfactorily take into account any anticipated adverse effects. The authorized officer may also grant an exception if the BLM determines, in consultation with Tribes, interested parties, and the Nevada SHPO (if required by the Statewide Protocol Agreement) that the action, as proposed or otherwise restricted, does not adversely affect Traditional Cultural Properties (TCP) listed on, or eligible for the NRHP.

Modification: The Authorized Officer may modify the size and shape of the NSO restricted area if the BLM determines, in consultation with the Nevada SHPO, interested parties, and/or Tribes, that the Area of Potential Effect to the National Register-listed Properties and Districts, National Historic Landmarks, and TCPs listed or eligible on the NRHP may be modified without causing adverse effects from those described in the original stipulation. Any modification authorized by this stipulation is subject to 43 C.F.R. 3101.1-4, including provisions requiring public review for issues of major public concern, or substantial modifications.

Waiver: NSO restrictions may be waived if it is determined that the described lands do not, in fact, contain sites listed on the NRHP or TCPs listed or eligible for the NRHP, or if the described lands within extended boundaries are determined to be not necessary to protect listed sites or listed or eligible TCPs where the setting and visual integrity are critical to their eligibility. Any waiver authorized by this stipulation is subject to 43 C.F.R. 3101.1-4, including provisions requiring public review for issues of major public concern, or substantial waivers.

**PROPOSED Stipulation: Trails
(Proposed #NV-B-07-D-NSO)**

Stipulation: No Surface Occupancy (NSO) will be applied directly on National Scenic and Historic Trails and Trails under Study or Recommended as Suitable for Congressional Designation and within National Trail Management Corridors. NSO may be applied to additional bordering lands; the extent will be dependent upon the topography and integrity of the setting surrounding individual trail segments along the designated NHT and National Historic Trail Corridor. Prior to the establishment of a National Trail Management Corridor, at a minimum, NSO will be applied 1/8-mile on either side of the center line of the trail (for a total of a 1/4-mile wide corridor). The center line will be established either through the GIS-based line provided by the Trail Administering Agency (NPS or BLM) or through GPS-based inventories uploaded on the Nevada Cultural Resource Inventory System (NVCRIS).

Objective [Purpose]: To protect the National Scenic and Historic Trails and Trails under Study or Recommended as Suitable for Congressional Designation, and National Trail Management Corridor resources, qualities, values, and associated settings.

Exception: The Authorized Officer may grant an exception if, through the National Historic Preservation Act (NHPA) and Management of National Scenic and Historic Trails and Trails Under Study or Recommended as Suitable for Congressional Designation Manual 6280 requirements, it is determined that the action, as proposed or otherwise restricted, does not adversely affect the resource. An exception may be granted for actions designed to enhance the long-term utility or availability of the trail.

Modification: The Authorized Officer may modify the size and shape of the restricted area if the NHPA and Management of National Scenic and Historic Trails and Trails under Study or Recommended as Suitable for Congressional Designation Manual 6280 requirements indicate the proposed action does not adversely impact the resource. Any modification authorized by this stipulation is subject to 43 C.F.R. 3101.1-4, including provisions requiring public review for issues of major public concern, or substantial modifications.

Waiver: The restriction may be waived if the NHPA and Management of National Scenic and Historic Trails and Trails under Study or Recommended as Suitable for Congressional Designation Manual 6280 requirements determine that the described lands are not contributing elements to the resource. This determination can only come after consultation with the National Park Service, Nevada State Historic Preservation Office and other interested publics. Any waiver authorized by this stipulation is subject to 43 C.F.R. 3101.1-4, including provisions requiring public review for issues of major public concern, or substantial waivers.

**PROPOSED Stipulation: Water Bodies; Wetland and Riparian Habitat
(Proposed #NV-B-10-A-NSO)**

Stipulation: No Surface Occupancy (NSO) on and within water bodies and riparian-wetland vegetated areas to protect the values and functions of these areas.

Objective [Purpose]: To protect the values and functions of riparian and wetland areas based on the nature, extent, and value of the area potentially affected.

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. An exception may be granted for actions designed to enhance the long-term utility or availability of the riparian habitat.

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. Any modification authorized by this stipulation is subject to 43 C.F.R. 3101.1-4, including provisions requiring public review for issues of major public concern, or substantial modifications.

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. Any waiver authorized by this stipulation is subject to 43 C.F.R. 3101.1-4, including provisions requiring public review for issues of major public concern, or substantial waivers.

PROPOSED Stipulation: Riparian Habitat Buffer
(Proposed #NV-B-10-B-CSU)

Stipulation: Controlled Surface Use (CSU) will be applied within 500 feet of riparian-wetland vegetation to protect the values and functions of these areas. An engineering plan or a study may be required by the operator that identifies the extent of the resource or how the resource will be managed or protected.

Objective [Purpose]: To protect the values and functions of riparian and wetland areas based on the nature, extent, and value of the area potentially affected.

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. An exception may be granted for actions designed to enhance the long-term utility or availability of the riparian habitat.

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. Any modification authorized by this stipulation is subject to 43 C.F.R. 3101.1-4, including provisions requiring public review for issues of major public concern, or substantial modifications.

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. Any waiver authorized by this stipulation is subject to 43 C.F.R. 3101.1-4, including provisions requiring public review for issues of major public concern, or substantial waivers.

PROPOSED Stipulation: 100-year Floodplains
(Proposed #NV-B-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. An exception may be granted for actions designed to enhance the long-term utility or availability of the 100-year flood plain.

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. Any modification authorized by this stipulation is subject to 43 C.F.R. 3101.1-4, including provisions requiring public review for issues of major public concern, or substantial modifications.

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. Any waiver authorized by this stipulation is subject to 43 C.F.R. 3101.1-4, including provisions requiring public review for issues of major public concern, or substantial waivers.

PROPOSED Stipulation: Playas
(Proposed #NV-B-10-D-NSO)

Stipulation: No Surface Occupancy (NSO) on playas. Playas are defined as the ephemeral round depressions within areas of dry lake beds in which water collects after a rain event and evaporates relatively quickly.

Objective [Purpose]: Protection of playas.

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. An exception may be granted for actions designed to enhance the long-term utility or availability of the playa resource.

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. Any modification authorized by this stipulation is subject to 43 C.F.R. 3101.1-4, including provisions requiring public review for issues of major public concern, or substantial modifications.

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. Any waiver authorized by this stipulation is subject to 43 C.F.R. 3101.1-4, including provisions requiring public review for issues of major public concern, or substantial waivers.

**PROPOSED Stipulation: Soil Slopes >40 percent
(#NV-B-11-B-NSO)**

Stipulation: No Surface Occupancy (NSO) on slopes greater than 40 percent.

Objective [Purpose]: To maintain soil productivity, provide necessary protection to prevent excessive soil erosion on steep slopes, to avoid areas subject to slope failure, mass wasting, piping, or having excessive reclamation problems.

Exception: The Authorized Officer may grant an exception if a staff review determines that the proposed action is of a scale (pipeline, vs. road, vs. well pad) or sited in a location or a site specific evaluation determines that the slope would not result in mass slope failure or accelerated erosion and the operator would be able to meet BLM's reclamation standards.

Modification: The Authorized Officer may modify the area subject to the stipulation based upon a BLM evaluation of the area. The stipulation and performance standards identified above may also be modified based on negative or positive monitoring results from similar proposed actions on similar sites or increased national or state performance standards. Any modification authorized by this stipulation is subject to 43 C.F.R. 3101.1-4, including provisions requiring public review for issues of major public concern, or substantial modifications.

Waiver: The restriction may be waived if it is determined that the described lands do not include lands with slopes greater than 40 percent. This determination shall be based upon USGS mapping and a BLM evaluation of the area. Any waiver authorized by this stipulation is subject to 43 C.F.R. 3101.1-4, including provisions requiring public review for issues of major public concern, or substantial waivers.

**Partial Deferral Alternative: parcels proposed for deferral, with rationales
(proposed future stipulations for updated RMP; see full text above)**

Parcel #	NRHP Proposed NV-B-07- C-NSO	Trails Proposed NV-B-07- D-NSO	Wetlands Proposed NV-B-10- A-NSO	Wetlands Proposed NV-B-10- B-CSU	Floodplain Proposed NV-B-10- C-NSO	Playa Proposed NV-B-10- D-NSO	Slopes Proposed NV-B-11- B-NSO	Deferred acreage	All or part of parcel
NV-17-06-004			X	X	X	X		1898.00	All
NV-17-06-005			X	X	X	X		1725.00	All
NV-17-06-006			X	X	X	X		1910.00	All
NV-17-06-007			X	X	X	X		1920.00	All
NV-17-06-008			X	X	X	X		1549.00	All
NV-17-06-009			X	X	X	X		1266.00	Part
NV-17-06-010			X	X	X	X		920.00	All
NV-17-06-011			X	X	X	X		2529.00	All
NV-17-06-012			X	X	X	X		2491.00	All
NV-17-06-013			X	X	X	X		1214.00	Part
NV-17-06-014			X	X	X	X		160.00	Part
NV-17-06-016			X	X	X	X		760.00	Part
NV-17-06-017			X	X	X	X		1130.00	Part
NV-17-06-018			X	X	X	X		1923.00	All
NV-17-06-019			X	X	X	X		1920.36	All
NV-17-06-020			X	X	X	X		1340.81	All
NV-17-06-021			X	X	X	X		1708.62	All
NV-17-06-022					X	X		891.00	Part
NV-17-06-023			X	X	X	X		2190.00	All
NV-17-06-024					X	X		800.00	Part
NV-17-06-025					X	X		1200.00	All
NV-17-06-026			X	X	X	X		1720.00	All
NV-17-06-040			X	X	X			480.00	Part
NV-17-06-046			X	X	X	X		640.00	Part
NV-17-06-047			X	X	X	X		1920.00	Part
NV-17-06-050			X	X	X	X		640.00	Part
NV-17-06-052			X	X	X	X		1761.35	All
NV-17-06-067			X	X	X	X		982.25	All
NV-17-06-069			X	X	X	X		2458.30	All
NV-17-06-070			X	X	X	X		2532.27	All
NV-17-06-071			X	X	X	X		2551.00	All
NV-17-06-072			X	X	X	X		2228.48	All
NV-17-06-073			X	X	X	X		2135.40	All

NV-17-06-074			X	X	X	X		2520.49	All
NV-17-06-075			X	X	X	X		2418.00	All
NV-17-06-076			X	X	X	X		2453.00	All
NV-17-06-077			X	X	X	X		2365.68	All
NV-17-06-078			X	X	X	X		2459.00	All
NV-17-06-079			X	X	X	X		2475.00	All
NV-17-06-080			X	X	X	X		1290.00	All
NV-17-06-081			X	X	X	X		1286.00	All
NV-17-06-082			X	X	X	X		2133.00	All
NV-17-06-084			X	X	X	X		2350.00	All
NV-17-06-085			X	X	X	X		2280.00	All
NV-17-06-086			X	X	X	X		2400.00	All
NV-17-06-087			X	X	X	X		2560.00	All
NV-17-06-088			X	X	X	X		1901.00	All
NV-17-06-089			X	X	X	X		1283.00	All
NV-17-06-090			X	X	X	X	X	133.01	Part
NV-17-06-092			X	X	X	X	X	671.00	Part
NV-17-06-093			X	X	X	X	X	2054.00	All
NV-17-06-094			X	X	X	X	X	480.00	Part
NV-17-06-095							X	1025.94	All
NV-17-06-096			X	X	X	X	X	1920.84	All
NV-17-06-097			X	X	X	X	X	2190.00	All
NV-17-06-098			X	X	X	X		1123.92	Parl
NV-17-06-099			X	X	X	X		2546.82	All
NV-17-06-100			X	X			X	1791.00	All
NV-17-06-101			X	X	X	X		1922.96	All
NV-17-06-102			X	X	X	X		640.00	Part
NV-17-06-103			X	X	X	X		1291.08	All
NV-17-06-104			X	X			X	610.00	All
NV-17-06-105	X	X	X	X			X	1958.25	All
NV-17-06-106			X	X	X	X		640.00	All

Total Deferral Acreage: 104,667.83

NV-B-07-C-NSO National Register-eligible Properties (NRHP) and Districts

NV-B-07-D-NSO National Scenic & Historic Trails

NV-B-10-A-NSO Riparian-wetland vegetated areas

NV-B-10-B-CSU Within 500 feet of Riparian-wetland vegetation

NV-B-10-C-NSO 100-year flood plain

NV-B-10-D-NSO Playas

NV-B-11-B-NSO Slopes greater than 40%

The table below provides Legal Lands Descriptions of parcels where “Part” is proposed for deferral under the Partial Deferral Alternative as identified in the table above. (For parcels where “All” is proposed for deferral, see Appendix A.)

Parcel #	Legal Lands Description	Total Acreage	LLD of part of parcel proposed for deferral	Deferred Acreage
NV-17-06-009	T.0130N, R.0430E, 21 MDM, NV Sec. 022 PROT ALL; 024 PROT ALL; 025 PROT N2,SE; 026 PROT N2; 027 PROT N2;	2372.00	T.0130N, R.0430E, 21 MDM, NV Sec. 022 PROT ALL; 024 PROT ALL;	1266.00
NV-17-06-013	T.0140N, R.0430E, 21 MDM, NV Sec. 021 LOTS 1-4; 021 N2,SE; 022 S2NE,SE,SW,S2; 027 S2NW; 027 PROT E2,SW; 034 SW; 034 PROT N2,SE;	2203.58	T.0140N, R.0430E, 21 MDM, NV Sec. 022 SENW, S2SE; 027 PROT E2,SW; 034 SW; 034 PROT N2,SE	1214.00
NV-17-06-014	T.0140N, R.0430E, 21 MDM, NV Sec. 028 N2NE,W2,S2SE; 029 ALL; 032 N2NE,SWNE,W2,SE; 033 E2E2,W2W2,SE,SW,SWSE;	2000.00	T.0140N, R.0430E, 21 MDM, NV Sec. 033 NESE, S2SE, SESW	160.00
NV-17-06-016	T.0130N, R.0440E, 21 MDM, NV Sec. 004 LOTS 1,2,5-12; 004 S2NE,SE; 009 ALL; 016 N2,SW,N2SE,SESE;	1870.94	T.0130N, R.0440E, 21 MDM, NV Sec. 009 SW; 016 N2,SW,N2SE,SESE;	760.00
NV-17-06-017	T.0130N, R.0440E, 21 MDM, NV Sec. 005 LOTS 1,2; 005 S2NE; 005 PROT NW,S2; 008 PROT ALL; 017 PROT ALL;	1926.16	T.0130N, R.0440E, 21 MDM, NV Sec. 005 PROT NW,S2; 008 PROT ALL;	1130.00
NV-17-06-022	T.0140N, R.0440E, 21 MDM, NV Sec. 017 PROT W2; 020 PROT W2,SE; 029 PROT ALL; 032 PROT N2,SW;	2066.00	T.0140N, R.0440E, 21 MDM, NV Sec. 017 PROT W2; 032 PROT N2,SW;	891.00
NV-17-06-024	T.0150N, R.0440E, 21 MDM, NV Sec. 013 ALL; 024 ALL; 025 ALL; 026 ALL;	2560.00	T.0150N, R.0440E, 21 MDM, NV Sec. 013 S2, S2N2; 024 NW; 026 NW;	800.00
NV-17-06-040	T.0250N, R.0510E, 21 MDM, NV Sec. 034 SWNE,W2,SE; 035 NE,SE,SW,SW,W2SE,SESE; 036 N2N2,SENE	1200.00	T.0250N, R.0510E, 21 MDM, NV Sec. 35 NE,SE,SW,SW,W2SE,SESE;	480.00

NV-17-06-046	T.0170N, R.0520E, 21 MDM, NV Sec. 008 PROT ALL; 009 PROT ALL; 010 PROT ALL;	1920.00	T.0170N, R.0520E, 21 MDM, NV Sec. 009 PROT ALL;	640.00
NV-17-06-047	T.0170N, R.0520E, 21 MDM, NV Sec. 011 PROT ALL; 014 PROT ALL; 015 PROT ALL; 016 PROT ALL;	2560.00	T.0170N, R.0520E, 21 MDM, NV Sec. 011 PROT ALL; 014 PROT ALL; 015 PROT ALL;	1920.00
NV-17-06-050	T.0210N, R.0520E, 21 MDM, NV Sec. 026 PROT ALL; 035 PROT ALL; 036 PROT ALL;	1920.00	T.0210N, R.0520E, 21 MDM, NV Sec. 026 PROT ALL;	640.00
NV-17-06-090	T.0180N, R.0540E, 21 MDM, NV Sec. 007 LOTS 4; 017 W2SW, SESW, SWSE; 018 LOTS 1,3,4; 018 S2NE, NENW, NESE, SESW; 019 LOTS 1-4; 019 NENW, E2SW, S2SE; 020 E2, S2SW;	1496.69	T.0180N, R.0540E, 21 MDM, NV; Sec. 017 SWSW; 018 Lots 1, 3;	133.01
NV-17-06-092	T.0210N, R.0540E, 21 MDM, NV Sec. 001 PROT ALL; 002 PROT ALL; 010 E2E2; 011 PROT ALL;	2099.00	T.0210N, R.0540E, 21 MDM, NV Sec. 001 PROT ALL;	671.00
NV-17-06-094	T.0210N, R.0540E, 21 MDM, NV Sec. 022 E2, E2W2; 023 N2NE, SWNE, NW; 024 NE, N2NW, SENW; 027 NE, E2W2, NWSE; 034 NENW, S2NW, SW;	1840.00	T.0210N, R.0540E, 21 MDM, NV Sec. 023 E2NW; NENE, W2NE; 024 NE, N2NW, SENW;	480.00
NV-17-06-098	T.0240N, R.0540E, 21 MDM, NV Sec. 004 LOTS 4; 004 SWNW, SW; 005 LOTS 1-4; 005 S2N2, S2; 008 ALL; 009 NWNE, W2, SWSE;	1925.07	T.0240N, R.0540E, 21 MDM, NV Sec. 005 LOTS 1-4; 005 S2N2, S2; 008 W2, W2E2;	1123.92
NV-17-06-102	T.0240N, R.0540E, 21 MDM, NV Sec. 028 ALL; 032 ALL; 033 ALL;	1920.00	T.0240N, R.0540E, 21 MDM, NV Sec. 032 ALL;	640.00

C.2. Additional Resource Protection Alternative

Under the Additional Resource Protection Alternative, all parcels that were identified for deferral pending future stipulations under the Partial Deferral Alternative would instead be offered for lease sale with stipulations that would be effective immediately upon leasing. These stipulations would all be CSU. Most of the same resources would be addressed by the new stipulations. Springs, wetland/riparian areas, floodplains and playas would be addressed together under a single “Water Resources” stipulation. Additional playa acreage would be included. Steep slopes would be addressed by a CSU stipulation for all slopes greater than 30 percent, instead of NSO for certain slopes greater than 40 percent. The segment of Pony Express Trail would be addressed by a lease notice specific to historic trails.

Also, new stipulations would be placed on additional parcels where needed to protect the important wildlife habitats identified by USFWS and NDOW. These would include the Water Resources CSU stipulation to protect a few discrete aquatic, wetland and riparian habitats for isolated occurrences of rare amphibian and fish species; plus Timing Limitation (TL) stipulations for critical mule deer and pronghorn winter range as identified in the 2014 NDOW Corporate Data Set, and mule deer movement corridors as identified by NDOW during this EA process. The stipulation for mule deer seasonal habitat applies the existing stipulation from the Tonopah RMP to parcels in the Mt. Lewis Field Office area, and applies it to the areas identified by NDOW 2014 data in the Tonopah Field Office area. These new stipulations would also be effective immediately upon leasing.

Proposed new stipulations and lease notice for the Additional Resource Protection Alternative are:

- Timing Limitation for pronghorn antelope seasonal habitat (NV-B-01-A-TL)
- Timing Limitation for mule deer seasonal habitat (NV-B-02-A-TL)
- Lease Notice for mule deer migration corridors (NV-B-02-B-TL)
- Lease Notice – Scenic and Historic Trails (NV-B-07-E-LN)
- Water Resources (NV-B-10-B-CSU)
- Slopes > 30% (NV-B-11-A-CSU)

The proposed new stipulations and lease notice are presented below in full, followed by legal land descriptions of the parcels or parts of parcels to which the new stipulations would apply if this alternative is selected.

**NEW Stipulation: Pronghorn Antelope Seasonal Habitat
(#NV-B-01-A-TL)**

Stipulation: Timing Limitation (TL) -No surface activity within Pronghorn Antelope crucial winter habitat from November 1 through April 30 [time period recommended by NDOW].

Objective [Purpose]: To protect Pronghorn Antelope crucial winter habitat necessary to maintaining the critical life stages of Pronghorn wildlife populations.

Exception: The Authorized Officer may grant an exception if an environmental review determines that the action, as proposed or otherwise restricted, does not adversely affect the Pronghorn Antelope and its habitat. An exception may also be granted if the proponent, BLM, and other affected interests negotiate mitigation that would satisfactorily offset the anticipated impacts to Pronghorn Antelope and its habitat. An exception may be granted for actions designed to enhance the long-term utility or availability of the habitat.

Modification: The boundaries of the stipulated area may be modified if the authorized officer, in consultation with Nevada Department of Wildlife, determines that portions of the area no longer contain the crucial winter pronghorn habitat or that the proposed action would not affect the species and habitat. The dates for the timing restriction may also be modified by the Authorized Officer if new information indicates the dates are not valid for the leasehold. Any modification authorized by this stipulation is subject to 43 C.F.R. 3101.1-4, including provisions requiring public review for issues of major public concern, or substantial modifications.

Waiver: The restriction may be waived by the Authorized Officer if it is determined that the described lands do not contain suitable pronghorn habitat, or are otherwise incapable of serving the requirements of for the species and therefore no longer warrant consideration as a component necessary for their protection. Any waiver authorized by this stipulation is subject to 43 C.F.R. 3101.1-4, including provisions requiring public review for issues of major public concern, or substantial waivers.

Parcel #	Legal Land Description
NV-17-06-045	T.0170N, R0520E, 21 MDM, NV Sec. 005 W1/2W1/2;
NV-17-06-046	T.0170N, R0520E, 21 MDM, NV Sec. 008 W1/2W1/2;
NV-17-06-048	T.0170N, R0520E, 21 MDM, NV Sec. 029 W1/2; 030 ALL

**NEW Stipulation: Mule Deer Seasonal Habitat
(#NV-B-02-A-TL)**

Stipulation: Timing Limitation (TL) -No surface activity within Mule Deer winter range from January 15 through May 15. The boundaries of the stipulated area may be modified if the Authorized Officer, in consultation with Nevada Department of Wildlife, determines that portions of the area no longer contain the winter mule deer habitat or that the proposed action would not affect the species and habitat. The dates for the timing restriction may also be modified by the Authorized Officer if new information indicates the dates are not valid for the leasehold. Any modification authorized by this stipulation is subject to 43 C.F.R. 3101.1-4, including provisions requiring public review for issues of major public concern, or substantial modifications.

<u>Parcel #</u>	<u>Legal Land Description</u>
NV-17-06-001	T.0120N, R0420E, 21 MDM, NV Sec. 013 LOTS 4-5; 024 LOTS 2, 7; 025 LOTS 2, 7, 8;
NV-17-06-002	T.0120N, R0420E, 21 MDM, NV Sec. 011 NW1/4, N1/2SW1/4, W1/2NE1/4; 011 NW1/4SE1/4, SE1/4SE1/4; 014 N1/2, W1/2SE1/4;
NV-17-06-045	ALL LANDS
NV-17-06-046	T.0170N, R0520E, 21 MDM, NV Sec. 008 N1/2, N1/2SE1/4; 009 ALL; 010 ALL;
NV-17-06-047	T.0170N, R0520E, 21 MDM, NV Sec. 011 ALL;
NV-17-06-052	T.0230N, R0520E, 21 MDM, NV Sec. 001 E1/2SE1/4NW1/4, E1/2E1/2SW1/4; 003 E1/2, E1/2SW1/4; 012 E1/2E1/2NW1/4,E1/2NE1/4SW1/4;
NV-17-06-053	T.0240N, R0520E, 21 MDM, NV Sec. 002 E1/2E1/2, SW1/4SE1/4;
NV-17-06-054	T.0240N, R0520E, 21 MDM, NV Sec. 011 E1/2, E1/2SW1/4; 014 ALL; 015 SE1/4SE1/4;

NV-17-06-055	T.0240N, R0520E, 21 MDM, NV Sec. 022 E1/2E1/2; 023 W1/2NE1/4, W1/2; 027 E1/2;
NV-17-06-056	T.0240N, R0520E, 21 MDM, NV Sec. 036 E1/2, E1/2SW1/4;
NV-17-06-061	T.0250N, R0520E, 21 MDM, NV Sec. 013 E1/2E1/2; 024 E1/2;
NV-17-06-064	T.0250N, R0520E, 21 MDM, NV Sec. 035 E1/2E1/2;
NV-17-06-083	T.0250N, R0520E, 21 MDM, NV Sec. 006 LOT 3; 006 E1/2W1/2, SW1/4SE1/4; 007 LOTS 3-4; 007 E1/2W1/2, W1/2E1/2; 018 LOTS 1-4; 018 NW1/4NE1/4, E1/2NW1/4, NE1/4SW1/4; 019 LOTS 1-3;
NV-17-06-091	T.0180N, R0530E, 21 MDM, NV Sec. 029 S1/2NE1/4, S1/2SE1/4NE1/4, S1/2; 030 LOT 4; 030 E1/2SW1/4, SE1/4; 031 LOTS 1-7; 031 NE1/4, E1/2NW1/4, NE1/4SW1/4, N1/2SE1/4; 032 N1/2, NW1/4SW1/4;

**NEW Lease Notice: Mule Deer Migration Corridors
(#NV-B-02-B-TL)**

The lease area may now or hereafter contain Mule Deer migration corridors recommended as suitable for protection by Nevada Department of Wildlife (NDOW). Surface-disturbing activities within NDOW defined Mule Deer migration corridors may be restricted from November 1 through April 30 in order to protect mule deer migration corridors necessary to maintaining the critical life stages of Mule Deer wildlife populations. After April 30, no additional protection measures should be required until the following season. The area and/or the timing of restrictions for the migration corridor may be modified if consultation with NDOW determines that portions of the area no longer contain the mule deer migration corridors or that the proposed action would not affect the species and habitat.

<u>Parcel #</u>	<u>Legal Land Description</u>
NV-17-06-001	ALL
NV-17-06-002	ALL
NV-17-06-003	ALL
NV-17-06-005	ALL
NV-17-06-006	ALL
NV-17-06-007	ALL
NV-17-06-008	ALL
NV-17-06-010	ALL
NV-17-06-011	ALL
NV-17-06-012	ALL
NV-17-06-013	ALL
NV-17-06-014	ALL
NV-17-06-015	ALL
NV-17-06-023	ALL
NV-17-06-042	ALL
NV-17-06-043	ALL
NV-17-06-044	ALL
NV-17-06-049	ALL
NV-17-06-050	ALL
NV-17-06-051	ALL
NV-17-06-052	ALL
NV-17-06-053	ALL
NV-17-06-054	ALL
NV-17-06-055	ALL
NV-17-06-056	ALL
NV-17-06-057	ALL
NV-17-06-060	ALL
NV-17-06-061	ALL
NV-17-06-063	ALL
NV-17-06-064	ALL

NV-17-06-065	ALL
NV-17-06-066	ALL
NV-17-06-067	ALL
NV-17-06-068	ALL
NV-17-06-074	ALL
NV-17-06-083	ALL
NV-17-06-086	ALL
NV-17-06-087	ALL
NV-17-06-088	ALL
NV-17-06-090	ALL
NV-17-06-091	ALL
NV-17-06-092	ALL
NV-17-06-093	ALL
NV-17-06-094	ALL
NV-17-06-104	ALL

**NEW Lease Notice – Scenic and Historic Trails
(#NV-B-07-E-LN)**

Scenic and Historic Trails Notice:

This lease contains National Scenic and Historic Trails and Trails under Study or Recommended as Suitable for Congressional Designation and within National Trail Management Corridors. The BLM will not approve any ground-disturbing activities that may affect any such properties or resources until it completes its obligation to consult with the State Historic Preservation Office (SHPO), the Trail Administering Agency (National Park Service (NPS) or other agency) and interested public and organizations 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.

<u>Parcel #</u>	<u>Legal Land Description</u>
NV-17-06-105	ALL LANDS

**NEW Stipulation: Water Resources
(#NV-B-10-B-CSU)**

Stipulation: A Controlled Surface Use (CSU) stipulation will be applied to oil and gas leases and land use authorizations to avoid impacts to the following areas: 1) identified 100-year flood plains, and playas; 2) areas within 500 feet of perennial waters, springs, wells, and wetland/riparian areas; and 3) areas within 100 feet of the inner gorge of ephemeral channels. Surface disturbing activities may require special engineering design, construction and implementation measures, potentially including relocation of operations more than 200 meters to protect water resources.

Objective [Purpose]: To protect landscape features that are sensitive areas for water resource impacts, and maintain proper functioning of water resources.

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, or could be conditioned so as to not negatively impact the water resources identified. An exception may be granted for actions designed to enhance the long-term utility or availability of the riparian habitat. An exception may also be granted when areas cannot be avoided and when engineering, best management practices, and/or design considerations are implemented to mitigate impacts to water resources.

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. Any modification authorized by this stipulation is subject to 43 C.F.R. 3101.1-4, including provisions requiring public review for issues of major public concern, or substantial modifications.

Waiver: The restriction may be waived by the Authorized Officer pending BLM approval of a site specific study by a qualified hydrologist or engineer that finds the areas proposed for surface occupancy after construction would: 1) pass the 10-year peak flow event without erosion, 2) pass the 25-year peak flow without failed infrastructure, 3) pass the 50-year peak flow event without failure (when surface occupancy is planned for greater than 50 years), 4) not impede 100-year peak flow events, 5) not negatively impact springs or wells, and 6) any wetlands impacted could be restored to their original function post occupancy.

Parcel #	Legal Land Description
NV-17-06-004 THRU NV-17-06-008	ALL LANDS
NV-17-06-009	T.0130N, R.0430E, 21 MDM, NV Sec. 022 PROT ALL; 024 PROT ALL;
NV-17-06-011 THRU NV-17-06-012	ALL LANDS

NV-17-06-013 **T.0140N, R.0430E, 21 MDM, NV**
 Sec. 022 SE1/4NW1/4, S1/2SE1/4;
 027 PROT E1/2,SW1/4;
 034 SW1/4;
 034 PROT N1/2;SE1/4;

NV-17-06-014 **T.0140N, R.0430E, 21 MDM, NV**
 Sec. 033 NE1/4SE1/4, S1/2SE1/4, SE1/4SW1/4;

NV-17-06-016 **T.0130N, R.0440E, 21 MDM, NV**
 Sec. 009 SW1/4;
 016 N1/2, SW1/4, N1/2SE1/4, SE1/4SE1/4;

NV-17-06-017 **T.0130N, R.0440E, 21 MDM, NV**
 Sec. 005 PROT NW1/4, S1/2;
 008 PROT ALL;

NV-17-06-018 **T.0130N, R.0440E, 21 MDM, NV**
 Sec. 007 PROT W1/2, S1/2S1/2;
 018 PROT ALL;

NV-17-06-020 **T.0130N, R.0440E, 21 MDM, NV**
 Sec. 020 PROT ALL;

NV-17-06-021 **T.0130N, R.0440E, 21 MDM, NV**
 Sec. 021 NW1/4, NW1/4NE1/4;

NV-17-06-022 **T.0140N, R.0440E, 21 MDM, NV**
 Sec. 017 PROT W1/2;

NV-17-06-037 **T.0250N, R.0510E, 21 MDM, NV**
 Sec. 018 E1/2W1/2, SW1/4,NE1/4, W1/2SE1/4;
 019 LOTS 3, 4,
 019 E1/2NW1/4, NE1/4SW1/4, N1/2NE1/4,SE1/4NE1/4;
 030 LOT 1;

NV-17-06-038 **T.0250N, R.0510E, 21 MDM, NV**
 Sec. 028 N1/2SW1/4, W1/2,SE1/4, SE1/4SE1/4;

NV-17-06-039 **T.0250N, R.0510E, 21 MDM, NV**
 Sec. 029 E1/2NE1/4;
 030 NE1/4NE1/4;

NV-17-06-040 **T.0250N, R.0510E, 21 MDM, NV**
 Sec. 034 N1/2NW1/4, SW1/4,NE1/4;
 035 S1/2NE1/4, SE1/4NW1/4, W1/2SE1/4, SE1/4SE1/4;

NV-17-06-069 **T.0230N, R.0530E, 21 MDM, NV**
 Sec. 002 N1/2;

	003 ALL; 004 ALL;
NV-17-06-070	T.0230N, R.0530E, 21 MDM, NV Sec. 005 N1/2; 006 ALL;
NV-17-06-073	ALL LANDS
NV-17-06-074	T.0240N, R.0530E, 21 MDM, NV Sec. 005 LOTS 1-3, 005 E1/2, E1/2SW1/4; 007 SE1/4, E1/2SW1/4; 008 ALL; 017 N1/2; 018 NE1/4;
NV-17-06-075 THRU	ALL LANDS
NV-17-06-076	
NV-17-06-077	T.0240N, R.0530E, 21 MDM, NV Sec. 020 S1/2; 029 E1/2NE1/4, SW1/4SW1/4; 031 ALL; 032 W1/2W1/2, E1/2SE1/4;
NV-17-06-078 THRU	ALL LANDS
NV-17-06-080	
NV-17-06-081	T.0250N, R.0530E, 21 MDM, NV Sec. 035 ALL; 036 NW1/4, N1/2NE1/4;
NV-17-06-082	T.0250N, R.0530E, 21 MDM, NV Sec. 001 ALL; 002 ALL; 003 E1/2, SW1/4;
NV-17-06-084	T.0250N, R.0530E, 21 MDM, NV Sec. 010 ALL; 011 ALL; 012 ALL;
NV-17-06-085 THRU	ALL LANDS
NV-17-06-087	
NV-17-06-088	T.0250N, R.0530E, 21 MDM, NV

Sec. 032 SE1/4;
033 ALL;
034 ALL;

NV-17-06-089

ALL LANDS

NV-17-06-090

T.0180N, R.0540E, 21 MDM, NV
Sec. 017 SWSW;
018 Lots 1, 3;

NV-17-06-098

T.0240N, R.0540E, 21 MDM, NV
Sec. 005 SW1/4, W1/2SE1/4;
008 ALL;

NV-17-06-099

T.0240N, R.0540E, 21 MDM, NV
Sec. 006 ALL;
007 ALL;
018 ALL;

NV-17-06-101

T.0240N, R.0540E, 21 MDM, NV
Sec. 019 ALL;

NV-17-06-102

T.0240N, R.0540E, 21 MDM, NV
Sec. 032 W1/2, W1/2E1/2;

NEW Stipulation: Slopes > 30%
(#NV-B-11-A-CSU)

Stipulation: Controlled Surface Use (CSU) applies to lands with slopes greater than 30 percent. An engineering/reclamation plan must be submitted by the applicant and approved by the BLM Authorized Officer before any surface disturbance can occur. The plan must demonstrate to the Authorized Officer's satisfaction how the operator will meet the following performance standards:

- Soil stability is maintained preventing slope failure and wind or water erosion.
- The site will be stable with no evidence of accelerated erosion features.
- The rate of soil erosion will be controlled to maintain or improve soil quality and sustainability.
- The disturbed soils shall have characteristics that approximate the reference site with regard to quantitative and qualitative soil erosion indicators described in H-7100-1 Soil Inventory, Monitoring, and Management Handbook.
- Sufficient topsoil is maintained for ensuring successful final reclamation.
- Interim reclamation will be completed for producing well locations and long-term roads, including the re-spreading of all salvaged topsoil over the areas of interim reclamation.
- The original landform and site productivity will be partially restored during interim reclamation and fully restored as a result of final reclamation.

Objective [Purpose]: To maintain soil productivity, provide necessary protection to prevent excessive soil erosion on lands with steep slopes, to avoid areas subject to slope failure, mass wasting, piping, or having excessive reclamation problems, and to ensure successful interim and final reclamation.

Exception: An exception may be granted by the Authorized Officer if an environmental analysis of the proposed action identifies that the scale of the operation would not result in any long term decrease in site productivity or increased erosion.

Modification: The area affected by this stipulation may be modified by the authorized officer if it is determined that portions of the area do not include slopes over 30 percent, or the operator can demonstrate in a plan of operations that adverse effects can be minimized. The authorized officer may modify the size and shape of the restricted area subject to the stipulation based upon a Natural Resource Conservation Service (NRCS) soil survey or BLM evaluation. The stipulation and performance standards identified above may also be modified based on negative or positive monitoring results from similar proposed actions on similar sites or increased national or state performance standards. Any modification authorized by this stipulation is subject to 43 C.F.R. 3101.1-4, including provisions requiring public review for issues of major public concern, or substantial modifications.

Waiver: This stipulation can be waived by the authorized officer if it is determined that none of the leasehold includes slopes over 30 percent. Any waiver authorized by this stipulation is subject to 43 C.F.R. 3101.1-4, including provisions requiring public review for issues of major public concern, or substantial waivers.

Parcel #	Legal Land Description
NV-17-06-033	ALL
NV-17-06-035	ALL
NV-17-06-038	ALL
NV-17-06-040	ALL
NV-17-06-041	ALL
NV-17-06-042	ALL
NV-17-06-043	ALL
NV-17-06-044	ALL
NV-17-06-045	ALL
NV-17-06-046	ALL
NV-17-06-047	ALL
NV-17-06-048	ALL
NV-17-06-049	ALL
NV-17-06-050	ALL
NV-17-06-051	ALL
NV-17-06-052	ALL
NV-17-06-053	ALL
NV-17-06-054	ALL
NV-17-06-057	ALL
NV-17-06-058	ALL
NV-17-06-059	ALL
NV-17-06-060	ALL
NV-17-06-061	ALL
NV-17-06-063	ALL
NV-17-06-064	ALL
NV-17-06-065	ALL
NV-17-06-067	ALL
NV-17-06-083	ALL
NV-17-06-090	ALL
NV-17-06-091	ALL
NV-17-06-092	ALL
NV-17-06-093	ALL
NV-17-06-094	ALL
NV-17-06-095	ALL
NV-17-06-096	ALL
NV-17-06-097	ALL
NV-17-06-100	ALL
NV-17-06-104	ALL
NV-17-06-105	ALL

Appendix D: Special Status Species List

Battle Mountain District (BMD) Draft Update, February 2017

BMD Threatened and Endangered Species List		
Common Name	Scientific Name	Status
Plants (8)		
Ash Meadows Milk-Vetch	<i>Astragalus phoenix</i>	FE,NS 1a,b
Spring-loving Centaury	<i>Centarium namophilum</i>	FT,NS 1a,b
Ash Meadow Sunray	<i>Encelioopsis nudicaulis var. corrugata</i>	FT,NS 1a,b
Ash Meadows Gumplant	<i>Grindelia fraxinipratensis</i>	FT,NS 1a,b
Ash Meadows Ivesia	<i>Ivesia kingii var. eremica</i>	FT,NS 1a,b
Ash Meadow Blazingstar	<i>Mentzelia leucophylla</i>	FT,NS1 a,b
Armagosa Niterwort	<i>Nitrophila mohavensis</i>	FE,NS1 a,b
Whitebark Pine	<i>Pinus albicaulis</i>	FC,NS 1a,b
Insects (1)		
Ash Meadow Naucorid	<i>Ambrysus amargosus</i>	FT,NS 1a,b
Birds (2)		
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	FT,NS 1a,b
Yuma clapper rail	<i>Rallus longirostris yumanensis</i>	FE,NS 1a,b
Reptile (1)		
Desert Tortoise	<i>Gopherus agassizii</i>	FT,NS 1a,b
Amphibians (1)		
Sierra Nevada Yellow-legged Frog	<i>Rana sierrae</i>	FE,NS 1a,b
Fish (9)		
White River Springfish	<i>Crenichthys baileyi baileyi</i>	FE,NS 1a,b
Hiko White River Springfish	<i>Crenichthys baileyi grandis</i>	FE,NS 1a,b
Railroad Valley Springfish	<i>Crenichthys nevadae</i>	FT,NS 1a,b
Devils Hole Pupfish	<i>Cyprinodon diabolis</i>	FE,NS 1a,b
Ash Meadows Amargosa Pupfish	<i>Cyprinodon nevadadensis mionectes</i>	FE,NS 1a,b
Warm Springs Pupfish	<i>Cyprinodon nevadadensis pectoralis</i>	FE,NS 1a,b
White River Spinedace	<i>Lepidomeda albivallis</i>	FE,NS 1a,b
Lahontan Cutthroat Trout	<i>Oncorhynchus clarkii henshawi</i>	FT,NS 1a,b
Ash Meadow Speckled Dace	<i>Rhinichthys osculus nevadadensis</i>	FE,NS 1a,b
Mammals (1)		
North American Wolverine	<i>Gulo gulo luscus</i>	PT, NS 2

***STATUS EXPLANATION & BLM CRITERIA:**

FE = Federal Endangered
 FT = Federal Threatened
 FC = Federal Candidate
 PT = Proposed Threatened
 NS = Nevada BLM Sensitive Species

Criteria set forth in the **BLM 6840 Manual** for designating sensitive species are:

1. Species designated as Bureau sensitive must be native species found on BLM administrated lands for which BLM has the capability to significantly affect the conservation status of the species through management, and either:
 - a. There is information that a species has recently undergone, is undergoing, or is predicted to undergo a downward trend such that the viability of the species or a distinct population segment of the species is at risk across all or a significant portion of the species range, or
 - b. The species depends on ecological refugia or specialized or unique habitats on BLM-administrated lands, and there is evidence that such areas are threatened with alteration such that the continued viability of the species in that area would be at risk.
2. All federally designated candidate species, proposed species, and delisted species in the 5 years following their delisting shall be conserved as Bureau sensitive species.

BMD Special Status Plant Species List		
Common Name (28)	Scientific Name	Status*
Eastwood milkweed	<i>Asclepias eastwoodiana</i>	NS, 1a
Cima milkvetch	<i>Astragalus cimae</i> var. <i>cimae</i>	NS, 1b
Tonopah milkvetch	<i>Astragalus pseudiodanthus</i>	NS, 1b
Toquima milkvetch	<i>Astragalus toquimanus</i>	NS, 1b
Currant milkvetch	<i>Astragalus uncialis</i>	NS, 1b
Elko rockcress	<i>Boechea falcifruca</i>	NS, 1b
Monte Neva paintbrush	<i>Castilleja salsuginosa</i>	NS, 1b
Tecopa birdbeak	<i>Cordylanthus tecopensis</i>	NS, 1b
Goodrich biscuitroot	<i>Cymopterus goodrichii</i>	NS, 1b
Nevada willowherb	<i>Epilobium nevadense</i>	NS, 1b
Windloving buckwheat	<i>Eriogonum anemophilum</i>	NS, 1b

Beatley buckwheat	<i>Eriogonum beatleyae</i>	NS, 1b
Tiehm buckwheat	<i>Eriogonum tiehmii</i>	NS, 1b
Sand cholla	<i>Grusonia pulchella</i>	NS, 1a,b
Lunar Crater buckwheat	<i>Johanneshowellia crateriorum</i>	NS, 1a
Davis peppergrass	<i>Lepidium davisii</i>	NS, 1b
Holmgren lupine	<i>Lupinus holmgrenianus</i>	NS, 1b
Low feverfew	<i>Parthenium ligulatum</i>	NS, 1b
Pahute Mesa beardtongue	<i>Penstemon pahutensis</i>	NS, 1b
Lahontan beardtongue	<i>Penstemon palmeri</i> var. <i>macranthus</i>	NS, 1b
Bashful beardtongue	<i>Penstemon pudicus</i>	NS, 1b
Tiehm beardtongue	<i>Penstemon tiehmii</i>	NS, 1b
Clarke phacelia	<i>Phacelia filiae</i>	NS, 1b
Williams combleaf	<i>Polyctenium williamsiae</i>	NS, 1b
Blaine pincushion	<i>Sclerocactus blainei</i>	NS, 1b
Tonopah pincushion	<i>Sclerocactus nyensis</i>	NS, 1b
Railroad Valley globemallow	<i>Sphaeralcea caespitosa</i> var. <i>williamsiae</i>	NS, 1b
Lone Mountain goldenhead	<i>Tonestus graniticus</i>	NS, 1b

BMD Special Status Animal Species List

Common Name	Scientific Name	Status*
BIRDS (35)		
Northern goshawk	<i>Accipiter gentilis</i>	NS, 1a,b
Tricolored blackbird	<i>Agelaius tricolor</i>	NS, 1a,b
Golden eagle	<i>Aquila chrysaetos</i>	NS, 2
Short-eared owl	<i>Asio [Strix] flammeus</i>	NS, 1a
Long-eared owl	<i>Asio [Strix] otus</i>	NS, 1a
Burrowing owl	<i>Athene cunicularia</i>	NS, 1a
Juniper titmouse	<i>Baeolophus griseus</i>	NS, 1a,b
Ferruginous hawk	<i>Buteo regalis</i>	NS, 1a,b
Swainson's hawk	<i>Buteo swainsoni</i>	NS, 1a,b
Greater sage-grouse	<i>Centrocercus urophasianus</i>	NS, 1a,b
Black tern	<i>Chlidonias niger</i>	NS, 1a,b
Bobolink	<i>Dolichonyx oryzivorus</i>	NS, 1a
Prairie falcon	<i>Falco mexicanus</i>	NS, 1a

Peregrine falcon	<i>Falco peregrinus</i>	NS, 1a,b
Greater sandhill crane	<i>Grus Canadensis tabida</i>	NS, 1b
Pinyon jay	<i>Gymnorhinus cyanocephalus</i>	NS, 1a,b
Bald eagle	<i>Haliaeetus leucocephalus</i>	NS, 2
Yellow-breasted chat	<i>Icteria virens</i>	NS, 1a,b
Least bittern	<i>Ixobrychus exilis</i>	NS, 1b
Loggerhead shrike	<i>Lanius ludovicianus</i>	NS, 1a,b
Black rosy-finch	<i>Leucosticte atrata</i>	NS, 1b
Lewis' woodpecker	<i>Melanerpes lewis</i>	NS, 1a
Long-billed curlew	<i>Numenius americanus</i>	NS, 1b
Mountain quail	<i>Oreortyx pictus</i>	NS, 1a,b
Sage thrasher	<i>Oreoscoptes montanus</i>	NS, 1a,b
Flammulated owl	<i>Otus flammeolus</i>	NS, 1a
<i>Phainopepla</i>	<i>Phainopepla nitens</i>	NS, 1b
<i>Vesper sparrow</i>	<i>Pooecetes gramineus</i>	NS, 1a
Red-naped sapsucker	<i>Sphyrapicus nuchalis</i>	NS, 1a
Brewer's sparrow	<i>Spizella breweri</i>	NS, 1a,b
Crissal thrasher	<i>Toxostoma crissale</i>	NS, 1a,b
LeConte's thrasher	<i>Toxostoma lecontei</i>	NS, 1a,b
Columbian sharp-tailed grouse	<i>Tympanuchus phasianellus columbianus</i>	NS, 1a,b
Lucy's warbler	<i>Vermivora luciae</i>	NS, 1a,b
Gray vireo	<i>Vireo vicinor</i>	NS, 1a,b
FISH (25)		
White River desert sucker	<i>Catostomus clarkii intermedius</i>	NS, 1b
Meadow Valley Wash desert sucker	<i>Catostomus clarkii ssp.</i>	NS, 1b
Flannelmouth sucker	<i>Catostomus latipinnis</i>	NS, 1a,b
Wall Canyon sucker	<i>Catostomus sp.</i>	NS, 1a,b
Preston White River springfish	<i>Crenichthys baileyi albivallis</i>	NS, 1b
Moorman White River springfish	<i>Crenichthys baileyi thermophilus</i>	NS, 1b
Yellowstone cutthroat trout	<i>Oncorhynchus clarki bouvieri</i>	NS, 1b
Bonneville cutthroat trout	<i>Oncorhynchus clarki utah</i>	NS, 1b
Interior redband trout	<i>Oncorhynchus mykiss gairdneri</i>	NS, 1b
Relict dace	<i>Relictus solitarius</i>	NS, 1b
Big Smokey Valley speckled dace	<i>Rhinichthys osculus lariversi</i>	NS, 1b
Moapa speckled dace	<i>Rhinichthys osculus moapae</i>	NS, 1b
Pahranagat speckled dace	<i>Rhinichthys osculus velifer</i>	NS, 1a,b
Meadow Valley speckled dace	<i>Rhinichthys osculus ssp.</i>	NS, 1b
Monitor Valley speckled dace	<i>Rhinichthys osculus ssp.</i>	NS, 1b
Oasis Valley speckled dace	<i>Rhinichthys osculus ssp.</i>	NS, 1b
Fish Creek Springs tui chub	<i>Siphateles bicolor euchila</i>	NS, 1b
Independence Valley tui chub	<i>Siphateles bicolor isolata</i>	NS, 1b

Newark Valley tui chub	<i>Siphateles bicolor newarkensis</i>	NS, 1b
Big Smokey Valley tui chub	<i>Siphateles bicolor ssp.</i>	NS, 1b
Charnock Ranch tui chub	<i>Siphateles bicolor ssp.</i>	NS, 1b
Hot Creek Valley tui chub	<i>Siphateles bicolor ssp.</i>	NS, 1b
Pleasant Valley tui chub	<i>Siphateles bicolor ssp.</i>	NS, 1b
Railroad Valley tui chub	<i>Siphateles bicolor ssp.</i>	NS, 1a,b
Fish Lake Valley tui chub	<i>Siphateles bicolor ssp.</i>	NS, 1a,b
MAMMALS (39)		
Pallid bat	<i>Antrozous pallidus</i>	NS, 1a,b
Pygmy rabbit	<i>Brachylagus idahoensis</i>	NS, 1a,b
Desert pocket mouse	<i>Chaetodipus penicillatus</i>	NS, 1a,b
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	NS, 1a,b
Desert kangaroo rat	<i>Dipodomys deserti</i>	NS, 1a,b
Big brown bat	<i>Eptesicus fuscus</i>	NS, 1a,b
Spotted bat	<i>Euderma maculatum</i>	NS, 1a,b
Greater western mastiff bat	<i>Eumops perotis californicus</i>	NS, 1a,b
Allen's lappet-browed bat	<i>Idionycteris phyllotis</i>	NS, 1a,b
Silver-haired bat	<i>Lasionycteris noctivagans</i>	NS, 1a,b
Western red bat	<i>Lasiurus blossevillii</i>	NS, 1a,b
Hoary bat	<i>Lasiurus cinereus</i>	NS, 1a,b
Sagebrush vole	<i>Lemiscus curtatus</i>	NS, 1a,b
North American river otter	<i>Lontra canadensis</i>	NS, 1a,b
California leaf-nosed bat	<i>Macrotus californicus</i>	NS, 1a,b
Dark kangaroo mouse	<i>Microdipodops megacephalus</i>	NS, 1a,b
Desert Valley kangaroo mouse	<i>Microdipodops megacephalus albiventer</i>	NS, 1b
Fletcher dark kangaroo mouse	<i>Microdipodops megacephalus nasutus</i>	NS, 1b
Pale kangaroo mouse	<i>Microdipodops pallidus</i>	NS, 1a,b
Pahranagat Valley montane vole	<i>Microtus montanus fucosus</i>	NS, 1b
Ash Meadows montane vole	<i>Microtus montanus nevadensis</i>	NS, 1b
California myotis	<i>Myotis californicus</i>	NS, 1a,b
Western small-footed myotis	<i>Myotis ciliolabrum</i>	NS, 1a,b
Long-eared myotis	<i>Myotis evotis</i>	NS, 1a,b
Little brown myotis	<i>Myotis lucifugus</i>	NS, 1a,b
Fringed myotis	<i>Myotis thysanodes</i>	NS, 1a,b
Cave bat	<i>Myotis velifer</i>	NS, 1a,b
Long-legged myotis	<i>Myotis volans</i>	NS, 1a,b
Yuma myotis	<i>Myotis yumanensis</i>	NS, 1a,b
Crawford's gray shrew	<i>Notiosorex crawfordi</i>	NS, 1a,b
Big free-tailed bat	<i>Nyctinomops macrotis</i>	NS, 1a,b
Western pipistrelle	<i>Pipistrellus hesperus</i>	NS, 1a,b
American Pika	<i>Ochotona princeps</i>	NS, 1a,b

Desert bighorn sheep	<i>Ovis canadensis nelsoni</i>	NS, 1a,b
Merriam's shrew	<i>Sorex merriami</i>	NS, 1a,
Inyo shrew	<i>Sorex tenellus</i>	NS, 1a
American water shrew	<i>Sorex pallustrus</i>	NS, 1a
Brazilian free-tailed bat	<i>Tadarida brasiliensis</i>	NS, 1b
Botta's pocket gopher*	<i>Thomomys bottae</i>	NS, 1b
Fish Spring pocket gopher**	<i>Thomomys bottae abstrusus</i>	NS
San Antonio pocket gopher**	<i>Thomomys bottae curatus</i>	NS
*Genetic analysis	**fused into Botta's pocket gopher	
AMPHIBIANS (5)		
Amargosa toad	<i>Anaxyrus [Bufo] nelsoni</i>	NS, 1a,b
Western toad	<i>Anaxyrus [Bufo] boreas</i>	NS, 1a,b
Columbia spotted frog	<i>Rana luteiventris</i>	NS, 2
Northern leopard frog	<i>Rana [Lothbates] pipeans</i>	NS, 1a,b
Great Basin spadefoot	<i>Spea intermontana</i>	NS, 1a
REPTILES (4)		
Banded gila monster	<i>Heloderma suspectum cinctum</i>	NS, 1a,b
Short-horned lizard	<i>Phrynosoma douglassii</i>	NS, 1b
Desert horned lizard	<i>Phrynosoma platyrhinos</i>	NS, 1b
Western red-tailed skink	<i>Plestiodon [Eumeces] gilberti rubricaudatus</i>	NS, 1b
MOLLUSCS (7)		
California floater	<i>Anodonta californiensis</i>	NS, 1a,b
Southern duckwater pyrg	<i>Pyrgulopsis anatine</i>	NS, 1b
Large-gland carico pyrg	<i>Pyrgulopsis basiglans</i>	NS, 1b
Carinate duckwater pyrg	<i>Pyrgulopsis carinata</i>	NS, 1b
Dixie Valley pyrg	<i>Pyrgulopsis dixensis</i>	NS, 1b
Oasis Valley pyrg	<i>Pyrgulopsis micrococcus</i>	NS, 1b
Wong's pyrg	<i>Pyrgulopsis wongi</i>	NS, 1b
Ants, Wasps, Bees (2)		
Mojave gypsum bee	<i>Andrena balsamrhiza</i>	NS, 1b
Mojave poppy bee	<i>Perdita meconis</i>	NS, 1b
True Bugs (1)		
Pahranagat naucorid bug	<i>Pelocoris shoshone shoshone</i>	NS, 1b
Beetles (5)		
Crescent Dunes aegialian scarab	<i>Aegialia crescenta</i>	NS, 1b
Aegialian scarab beetle	<i>Aegialia knighti</i>	NS, 1b
Crescent Dunes aphodius scarab	<i>Aphodius ssp.</i>	NS, 1b

Crescent Dunes serican scarab	<i>Serica ammomenisco</i>	NS, 1b
Sand Mountain serican scarab	<i>Serica psammobunus</i>	NS, 1b
Butterflies (6)		
Big Smoky wood nymph	<i>Cercyonis oetus alkalorum</i>	NS, 1b
White River wood nymph	<i>Cercyonis pegala pluvialis</i>	NS, 1b
White Mountains skipper	<i>Hesperia miriamae longaevicola</i>	NS, 1b
Railroad Valley skipper	<i>Hesperia uncas fulvapalla</i>	NS, 1b
White River valley skipper	<i>Hesperia uncas grandiosa</i>	NS, 1b
Great Basin small blue	<i>Philotiella speciosa septentrionalis</i>	NS, 1b

Appendix E: Hydraulic Fracturing White Paper

This White Paper on hydraulic fracturing is derived from the Hydraulic Fracturing White Paper (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 maximize the extraction of underground resources – oil, natural gas and geothermal energy. The HF process includes the acquisition of water, mixing of chemicals, production zone fracturing, and HF flowback disposal.

In the United States, HF has been used since the 1940s. 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 further open existing fractures and/or create new fractures. This allows the hydrocarbons to more readily flow into the wellbore. HF has gained interest recently as hydrocarbons previously 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 1970s 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:

1. Water, proppant, and chemical additives are pumped at extremely high pressures down the wellbore.
2. 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.
3. Company personnel continuously monitor and gauge pressures, fluids and proppants, studying how the sand reacts when it hits the bottom of the wellbore, slowly increasing the density of sand to water as HF progresses.
4. 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 and get maximum fracturing results in the rock.
5. The plugs are drilled or removed from the wellbore and the well is tested for results.

6. The pressure is reduced and the fracturing fluids are returned up the wellbore for disposal or treatment and re-use, leaving the sand 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 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 50,000 to 300,000 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 tight sand gas 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 large volumes of gas production, but this may change depending on the formation.

Gas emissions associated with the HF process are captured when the operator utilizes a green completion process. Where a green completion process is not utilized, gas 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 a small percentage of special-purpose chemical additives and proppant. 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 5,000 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 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 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. 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.

About 77 percent of water withdrawals are for agricultural use. 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 greywater), 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).

Potential Sources of Water for Hydraulic Fracturing

Freshwater-quality water 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.

Several sources of water are available for drilling and/or HF in NV. Because Nevada's water rights system is based in the prior appropriation doctrine, water cannot be diverted from a stream/reservoir or pumped out of the ground for drilling and/or HF without reconciling that diversion with the prior appropriation doctrine. 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 satisfy the water appropriation doctrine. 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.

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 Department of Environmental Protection, State Engineer's Office (NDEP) 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 "over appropriated," that is, the flows do not reliably occur in such a magnitude that all of the vested water rights on those streams can be satisfied. Therefore, the only time that an operator may be able to divert water directly from a river is during periods of high flow and less demand. These periods do occur but not reliably or predictably.

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 NDEP 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 NDEP to drill and use a new water supply well. These wells are usually drilled on location to provide an on-demand supply. These industrial-type water supply wells are typically drilled deeper than nearby domestic and/or stock wells to minimize drawdown interference, and have large capacity pumps. 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 and are under the jurisdiction of the NDEP. Plugging these wells is under the jurisdiction of the NDEP and BLM.

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. Water wells developed for oil and gas drilling could also result in a draw down in the quantity of water in nearby residential areas depending upon the geology; however it is not currently possible to predict whether or not such water wells would be developed.

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.

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

1. Contamination of aquifers through the introduction of drilling and/or completion fluids through spills or drilling problems such as lost circulation zones.
2. 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.
3. 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.
4. Localized depletion of perched aquifer or drawdown of unconfined groundwater aquifer.

5. 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.

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

Improper casing and cementing

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 aquifers/formations.

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. For example, according to a 2012 Bipartisan Policy Center report, the fracturing process itself is unlikely to directly affect freshwater aquifers because 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. Fractures created during HF have not been shown to span the distance between the targeted oil formation and freshwater bearing zones. 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:

1. Physical properties, types, thicknesses, and depths of the targeted formation as well as those of the overlying geologic formations.
2. 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 would be 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 may be recovered at the surface. 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. 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, hydrogeologic, 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.

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.

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:

1. 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
2. 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.

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. References

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Willberg DM, Steinsberger N, Hoover R, Card RJ, Queen J (1998) Optimization of fracture cleanup using flowback analysis. SPE 39920. Presented paper. SPE Rocky Mountain Regional/Low-permeability Reservoirs Symposium and Exhibition, Denver CO, 5-8 April 1998.

Appendix F: State of Nevada Hydraulic Fracturing Regulations

ADOPTED REGULATION OF THE COMMISSION ON MINERAL RESOURCES

LCB File No. R011-14

Effective October 24, 2014

AUTHORITY: §§1-19 and 22, NRS 522.040 and 522.119; §20, NRS 522.040 and 522.150; §21, NRS 534A.090.

A REGULATION relating to natural resources; providing for the regulation of hydraulic fracturing in this State; revising provisions governing the operation of wells for the extraction of oil, gas and geothermal resources; and providing other matters properly relating thereto.

Legislative Counsel's Digest:

Existing law authorizes the Division of Minerals of the Commission on Mineral Resources to regulate wells drilled for the production of oil, gas and geothermal resources. (Chapters 522 and 534A of NRS) In 2013, Senate Bill No. 390 required the Division of Minerals and the Division of Environmental Protection of the State Department of Conservation and Natural Resources, jointly, to develop a hydraulic fracturing program for the State of Nevada. This regulation adopted by the Commission on Mineral Resources generally establishes that program.

Sections 9-13 of this regulation provide for the regulation of a well for which an operator intends to engage in hydraulic fracturing. Section 9 provides for the sampling, testing and continued monitoring of certain water sources located within a specified sampling area. Section 10 requires an operator to include with his or her application to drill certain information. Section 11 establishes certain additional requirements for the installation and cementing of certain casing strings in a well used for hydraulic fracturing. Section 12 establishes certain notice, reporting, monitoring and certification requirements for the operator of a hydraulic fracturing operation and additionally establishes certain requirements for the use of chemicals during the hydraulic fracturing process and the containment and disposal of liquids that are returned to the surface and discharged from the wellbore during hydraulic fracturing. Section 13 authorizes an operator of certain existing oil or gas wells to request and the Division of Minerals to approve a hydraulic fracturing operation at the oil or gas well.

Sections 14-20 of this regulation revise provisions of general applicability to all oil and gas wells. Section 14: (1) requires an operator to maintain a copy of the drilling permit at the site of the well during the operation of the well; (2) prescribes certain notice requirements relating to spudding a well and installing or cementing casing or equipment for the prevention of a blowout; (3) requires an operator to ensure compliance with certain industry standards relating to casing; and (4) provides for the management, containment and disposal of spills or releases and liquids that are returned to the surface and discharged from the wellbore during the drilling operation. Section 15 prescribes certain safety measures for the safe operation of the well. Section 18 revises provisions governing certain applications submitted to and permits issued by the Division. Section 19 revises provisions relating to the installation and cementing of

the surface casing string, an intermediate casing string or liner and a production casing string or liner in an oil or gas well. Section 19 additionally requires an operator to report certain information to the Division of Minerals to ensure the safe operation of the well. Section 20 increases the amount of the administrative fee that a producer or purchaser of oil or natural gas must pay to offset the expenses of the Division.

Section 21 of this regulation revises provisions prescribing certain safety measures for the safe operation of geothermal wells.

Section 22 of this regulation repeals certain regulations relating to wells drilled with cable tools and administrative fees for the new production of oil or natural gas.

Section 1. Chapter 522 of NAC is hereby amended by adding thereto the provisions set forth as sections 2 to 15, inclusive, of this regulation.

Sec. 2. "Area of review" means:

1. The area of land located within a radius of 1 mile of a proposed oil or gas well and any surface projection of any lateral component of the wellbore that is proposed for hydraulic fracturing; and
2. Any additional area of land prescribed by the Division or specified by an operator pursuant to subsection 3 of section 10 of this regulation.

Sec. 3. "Available water source" means a water source for which the person who owns, holds or has the right of use to the water source has consented to the sampling and testing of the water source and to making the results of the sampling and testing available to the public.

Sec. 4. "Division of Environmental Protection" means the Division of Environmental Protection of the State Department of Conservation and Natural Resources.

Sec. 5. "Hydraulic fracturing" has the meaning ascribed to it in paragraph (b) of subsection 3 of NRS 522.119.

Sec. 6. "Sampling area" means the area of land located within a radius of 1 mile of a proposed oil or gas well and any surface projection of any lateral component of the wellbore that is proposed for hydraulic fracturing.

Sec. 7. "Water source" means a water well or spring that is regulated by the Division of Water Resources of the State Department of Conservation and Natural Resources.

Sec. 8. Except as otherwise provided in section 13 of this regulation, the provisions of sections 2 to 13, inclusive, of this regulation, apply for each oil or gas well for which the operator intends to engage in hydraulic fracturing.

Sec. 9. 1. Except as otherwise provided in subsections 2 and 4, an operator shall collect an initial baseline sample and subsequent monitoring samples from each available water source, not to exceed four available water sources, located within the sampling area. If more than four available water sources are

located within the sampling area, the operator shall select the four available water sources for sampling based on:

- (a) The proximity of the available water sources to the proposed oil or gas well. Available water sources closest to the proposed oil or gas well are preferred.
- (b) The orientation of the sampling locations relative to the available water sources. To the extent that the direction of the flow of groundwater is known or can reasonably be inferred, sample locations from both down-gradient and up-gradient locations are preferred over cross- gradient locations.
- (c) The depth of the available water sources. The sampling of the deepest of the available water sources is preferred.
- (d) The condition of the available water sources. An operator is not required to sample an available water source if the Administrator determines that the available water source is improperly maintained or nonoperational, or has physical characteristics which would prevent the safe collection of a representative sample or which would require nonstandard sampling equipment.
- (e) The construction and use of the water source. If an operator constructs a temporary well within the sampling area to use as a water source for the purpose of supporting the drilling or operation of an oil or gas well, the operator must include the water source as an available water source for the purpose of sampling and monitoring pursuant to this section.

2. An operator may, before a well is spudded or drilled for oil or gas, request an exception from the requirements of this section by filing a sundry notice (Form 4) with the Administrator. The Administrator may grant the request for an exception if the Administrator finds that:

- (a) No available water sources are located within the sampling area;
- (b) The only available water sources are unsuitable pursuant to paragraph (d) of subsection 1; or
- (c) Each owner of a water source that is suitable for testing and located within the sampling area has refused to grant the operator access to the water source for sampling and additionally finds that the operator has made a reasonable and good faith effort to obtain the consent of the owner to conduct the sampling.

An operator seeking an exception on the grounds set forth in paragraph (b) shall provide to the Administrator documentation of the conditions of each available water source which is deemed unsuitable. An operator seeking an exception on the grounds set forth in paragraph (c) shall provide to the Administrator documentation of the efforts of the operator to obtain the consent of each owner of a water source.

3. Except as otherwise provided in subsections 2 and 4, an operator shall collect from each available water source for which the operator is required to collect samples pursuant to this section:

- (a) An initial sample during the 12-month period immediately preceding the commencement of hydraulic fracturing at an oil or gas well.

(b) A first subsequent sample, collected not earlier than 6 months but not later than 12 months after the commencement of hydraulic fracturing. If a well that has been drilled produces hydrocarbons for a period of less than 6 months after the commencement of hydraulic fracturing and the well is subsequently plugged and abandoned, or if the well is plugged and abandoned without having produced hydrocarbons after the commencement of hydraulic fracturing, the operator shall collect each first subsequent sample at the time the well is plugged.

A second subsequent sample, collected not earlier than 60 months but not later than 72 months after the commencement of hydraulic fracturing. If a well that has been drilled produces hydrocarbons for a period of less than 60 months and the well is subsequently plugged and abandoned, the operator shall collect each second subsequent sample at the time the well is plugged. An operator is not required to collect second subsequent samples if a well that is drilled is plugged and abandoned without having produced hydrocarbons.

4. For the purposes of satisfying the requirements for sampling available water sources pursuant to paragraphs (a) and (b) of subsection 3, an operator may rely on the test results of a previous sample from an available water source if:

(a) The previous sample was collected and tested during the respective period prescribed for sampling pursuant to paragraph (a) or (b) of subsection 3.

(b) The procedure for collecting and testing the sample, and the constituents for which the sample was tested, are substantially similar to those required by this section.

(c) The Administrator receives the test results not less than 14 days before the commencement of hydraulic fracturing.

5. The Administrator may require an operator to collect and test samples of an available water source in addition to the collection and testing protocol prescribed by this section if the Administrator finds that additional testing is warranted.

6. The testing of a water sample pursuant to this section must be conducted by a laboratory certified pursuant to NAC 445A.0552 to 445A.067, inclusive. Upon request, an operator shall provide his or her protocol for collection and testing to the Administrator.

7. The test results of initial and subsequent samples collected pursuant to this section must include, without limitation:

(a) The level of each analyzed constituent identified in the routine domestic water analysis of the Nevada State Public Health Laboratory of the University of Nevada School of Medicine.

(b) The levels of benzene, toluene, ethylbenzene and xylene.

(c) The levels of dissolved methane, ethane, propane and hydrogen sulfide gases within the sample.

8. If a dissolved methane concentration greater than 10 milligrams per liter (mg/l) is detected in a sample of water collected pursuant to this section, an analysis of the gas composition, including, without limitation, an analysis of the stable isotope ratios of carbon (^{13}C vs. ^{12}C) and hydrogen (^2H vs. ^1H) and

an analysis of the origin (biogenic vs. thermogenic), must be performed on the sample using gas chromatography and mass spectrometry, as necessary.

9. An operator shall immediately notify the Administrator and the owner of an available water source if the test results of a sample collected pursuant to this section indicate:

(a) The presence of benzene, toluene, ethylbenzene, xylene or hydrogen sulfide in a concentration greater than the specified maximum contaminant level set forth in the primary and secondary standards for drinking water pursuant to NAC 445A.453 and 445A.455.

(b) If the sample is a subsequent sample, any change in water chemistry indicative of a degradation in water quality.

10. An operator shall provide copies of the test results of each sample collected pursuant to this section to the Administrator and to the respective owner of the available water source not later than 30 days after the operator receives the test results from a laboratory. The Division will, upon request, make the test results available to a member of the public for inspection at the office of the Division located in Carson City.

11. An operator shall include with the copy of the test results of a sample provided pursuant to subsection 10 a description of the location of the available water source and any field observations recorded by the operator during the collection of the sample. The operator shall describe the location of the available water source by public land survey and the county assessor's parcel number and shall include the global positioning system coordinates of the available water source in the manner prescribed by subparagraph (2) of paragraph (b) of subsection 2 of NAC 534.340.

12. An operator shall not commence hydraulic fracturing at a well until the operator has complied with subsections 1, 2 and 4 to 11, inclusive, and paragraph (a) of subsection 3.

13. As used in this section, "public land survey" has the meaning ascribed to it in NAC 534.185.

Sec. 10.1. An operator must include with his or her application to drill an oil or gas well:

(a) The water appropriation permit number and the name of the owner of each water source within the area of review that is on file with the Division of Water Resources of the State Department of Conservation and Natural Resources.

(b) The well log number, well depth and the diameter of the water well casing.

(c) The static water level below the surface of the ground or the rate of flow of the water, if any.

(d) A description of the location of each water source located within the area of review in the manner prescribed by subsection 11 of section 9 of this regulation.

(e) Publically available maps and cross-sections of the area of review which describe the surface and subsurface geology of the area of review, including, without limitation, the location of known or suspected faults.

(f) A map showing the location of each water source or perennial stream located within the area of review, the overall project area or lease holdings, the boundaries of the area of review, all known well locations, land ownership and applicable assessor parcel numbers.

(g) The source and estimated volume of water required for hydraulic fracturing in each well.

(h) A plan for the management and disposal of all fluids to be used in the proposed hydraulic fracturing operation.

2. If an operator discovers inconsistencies with respect to publically available and proprietary hydrologic or geologic information within an area of review that the operator reasonably believes to be relevant with respect to potential contamination from hydraulic fracturing, the operator shall disclose the inconsistencies to the Division.

3. The Division may prescribe or an operator may specify an area of review that includes an area of land in addition to that area of land located within a radius of 1 mile of a proposed oil or gas well and any surface projection of any lateral component of the wellbore that is proposed for hydraulic fracturing for the purposes of compliance with this section or the collection of additional data based on population density, residential locations, water source locations or for other good cause as the Division or an operator may deem reasonable.

Sec. 11. In addition to the requirements prescribed by NAC 522.265, the operator of an oil or gas well shall:

1. Ensure that:

(a) The surface location of the well is at a lateral distance of not less than 300 feet from any known perennial water source, existing water well or existing permitted structure.

(b) The edge of the drilling pad is at a lateral distance of not less than 100 feet from any known perennial water source, existing water well or existing permitted structure.

An owner or an operator may request and the Division may approve an exception to the requirements prescribed by this subsection.

2. For the intermediate casing string installed in the well directly below the surface casing, install the intermediate casing string through the surface casing from the installed depth of the intermediate casing string to the surface of the ground.

3. For a production casing string, conduct a pressure test of the casing string in which the casing is pressurized to 3,000 pounds or more per square inch gauge (psig), not to exceed 80 percent of the burst-pressure rating of the casing, for a period of not less than 30 minutes. A pressure test must be conducted and the results of the test must be reported in the manner prescribed by subsection 7 of NAC 522.265.

Sec. 12.1. An operator of an oil or gas well shall:

(a) Not less than 14 days before the commencement of hydraulic fracturing:

- (1) Provide written notice to each owner of real property and any operator of an oil, gas or geothermal well located within the area of review of the hydraulic fracturing operation.
 - (2) Provide written notice to the board of county commissioners in the county in which the oil or gas well is located.
 - (3) Submit to the Division an affidavit (Form 15) certifying that each strata is sealed and isolated with casing and cement in accordance with NAC 522.260. The affidavit must be signed by the operator or a competent person designated by the operator and must incorporate and include a copy of each relevant cement evaluation log as evidence of compliance with NAC 522.260.
 - (4) Submit for approval by the Division a sundry notice (Form 4) and a report describing all specific aspects of the proposed hydraulic fracturing operation. The report must identify each stage of the hydraulic fracturing operation, the measured depth and true vertical depth below the surface of the ground for each stage, the duration of each stage, all intervals to be perforated in measured depth and true vertical depth below the surface of the ground, the number and diameter of perforations per foot and the estimated hydraulic pressures to be utilized.
 - (b) Maintain a record as to the manner in which each owner, operator and board of county commissioners was notified pursuant to subparagraphs (1) and (2) of paragraph (a), including, without limitation, the method of notification.
 - (c) Before the commencement of hydraulic fracturing:
 - (1) Ensure that each chemical used in the hydraulic fracturing process is identified on the Internet website maintained by the Division as a chemical which is approved by the Division for hydraulic fracturing. An operator may request and the Division may approve the use of a chemical that is not identified as an approved chemical if the operator submits the request to the Division on a sundry notice (Form 4) not less than 30 days before the commencement of hydraulic fracturing.
 - (2) Disclose to the Division each additive that the operator intends to use in the hydraulic fracturing fluid, including, without limitation, any additive that may be protected as a trade secret. The operator shall include with the identity of each additive the trade name and vendor of the additive and a brief description of the intended use or function of the additive.
2. The operator shall monitor and record all well head pressures, including each annular space pressure, during the hydraulic fracturing operation. The maximum hydraulic pressure to which a segment of casing is exposed must not exceed the burst-pressure rating of the casing, but the Division may require a lower maximum hydraulic pressure as the Division determines is necessary. The operator shall immediately stop the hydraulic fracturing process and notify the Division if any change in annular space pressure is observed which suggests communication with the hydraulic fracturing fluids. The operator shall provide the Division with a report documenting all recorded hydraulic fracturing pressures for each stage of the hydraulic fracturing operation not later than 15 days after the completion of each stage.
 3. The operator shall contain all liquids that are returned to the surface and discharged from the wellbore at the conclusion of each stage of the hydraulic fracturing operation. The operator shall contain

the liquids in enclosed tanks or in the manner prescribed by the Division of Environmental Protection pursuant to chapters 445A of NRS and 445A of NAC.

4. Except as otherwise provided in subsection 5 and not later than 60 days after the completion of a hydraulic fracturing operation, the operator shall report, at a minimum, to the Internet website www.fracfocus.org for inclusion in FracFocus, or its successor registry:

- (a) The name of the operator, the well name and well number and the American Petroleum Institute well number.
- (b) The date of the hydraulic fracturing treatment, the county in which the well is located, any public land surveys relevant to the location of the well and the global positioning system coordinates of the well.
- (c) The true vertical depth of the well and the total volume of water used in the hydraulic fracturing treatment of the well or if the operator utilizes a base fluid other than water, the type and total volume of the base fluid used in the hydraulic fracturing treatment.
- (d) The identity of each additive used in the hydraulic fracturing fluid, including, without limitation, the trade name and vendor of the additive and a brief description of the intended use or function of the additive.
- (e) The identity of each chemical intentionally added to the base fluid.
- (f) The maximum concentration, measured in percent by mass, of each chemical intentionally added to the base fluid.
- (g) The Chemical Abstracts Service Registry Number for each chemical intentionally added to the base fluid, if applicable.

5. Proprietary information with respect to a trade secret does not constitute public information and is confidential. An operator may submit a request to the Division to protect from disclosure any information which, under generally accepted business practices, would be considered a trade secret or other confidential proprietary information of the business. The Administrator shall, after consulting with the operator, determine whether to protect the information from disclosure. If the Administrator determines to protect the information from disclosure, the protected information:

- (a) Is confidential proprietary information of the operator.
- (b) Is not a public record.
- (c) Must be redacted by the Administrator from any report that is disclosed to the public.
- (d) May only be disclosed or transmitted by the Division:
 - (1) To any officer, employee or authorized representative of this State or the United States:
 - (I) For the purposes of carrying out any duties pursuant to the provisions of this chapter or chapter 522 of NRS; or

(II) If the information is relevant in any judicial proceeding or adversary administrative proceeding under this chapter or chapter 522 of NRS or under the provisions of any federal law relating to oil or gas wells or hydraulic fracturing, and the information is admissible under the rules of evidence; or

(2) Upon receiving the consent of the operator.

The disclosure of any proprietary information pursuant to this subsection must be made in a manner which preserves the status of the information as a trade secret.

6. The Division shall make available to the public for inspection any information, other than a trade secret or other proprietary information that is maintained confidentially pursuant to subsection 5, that is submitted by an operator pursuant to this section.

7. As used in this section, "trade secret" has the meaning ascribed to it in NRS 600A.030.

Sec. 13.1. Notwithstanding any provision of sections 2 to 12, inclusive, of this regulation to the contrary, an operator of an oil or gas well that was drilled and spudded before October 24, 2014, may request approval from the Division to conduct a hydraulic fracturing operation at the oil or gas well by submitting a sundry notice (Form 4) to the Division. The sundry notice must include, without limitation:

(a) A cement evaluation log of the production casing string that has been conducted not less than 5 years before the submission of the sundry notice.

(b) A pressure test of the production casing string conducted in the manner prescribed by subsection 7 of NAC 522.265.

(c) Any other information required by the Division.

2. The Division will, upon receipt of a request pursuant to subsection 1, evaluate each well design which is the subject of the request and approve or disapprove the request.

Sec. 14. An operator of an oil or gas well shall:

1. Maintain a copy of the approved drilling permit at the site of the well during the operation of the well, including, without limitation, during the stages of drilling, hydraulic fracturing, reconditioning and completion.

2. Not less than 24 hours before a well is spudded for oil or gas, notify the Division by telephone or electronic mail

3. Not less than 24 hours before installing or cementing casing, installing any equipment for the prevention of a blowout or conducting a formation integrity test, notify the Division by telephone or electronic mail.

4. Ensure that the casing installed in the well meets the minimum specifications for casing prescribed by the American Petroleum Institute in Specification 5CT, "Specification for Casing and Tubing, Ninth Edition," or by its successor organization, or as may be otherwise prescribed by the Administrator.

5. Notify the Division if any casing or casing material has been previously used in a hydraulic fracturing operation or in any other oil or gas well.
6. Ensure that the cementing of each casing string meets the minimum specifications prescribed by the American Petroleum Institute in Specification 10A, "Specification for Cements and Materials for Well Cementing, Twenty-Fourth Edition," or by its successor organization, or as may be otherwise prescribed by the Administrator.
7. Store and contain all materials at the site of the well in a safe and orderly manner.
8. Manage spills or releases in the manner prescribed by the Division of Environmental Protection pursuant to chapters 445A of NRS and 445A of NAC.
9. Except as otherwise provided in subsection 3 of section 12 of this regulation, contain all liquids that are returned to the surface and discharged from the wellbore in the manner prescribed by the Division of Environmental Protection pursuant to chapters 445A of NRS and 445A of NAC. A reserve pit for drilling liquids must not subsequently be used for the discharge of wellbore liquids during the testing of the well without the prior approval of the Administrator
10. If an unintentional mechanical failure of the well or an uncontrolled flow or spill from the well site occurs, immediately notify:
 - (a) The Division at the telephone number of the Division.
 - (b) The Division of Environmental Protection at the spill reporting hotline maintained on its Internet website.

An operator may obtain information on the types of spills which must be reported pursuant to this subsection at the Internet website http://ndep.nv.gov/BCA/spil_rpt.htm.

Sec. 15.1. An operator shall take all precautions which are necessary to keep wells under control and operating safely at all times. Well control and wellhead assemblies used in an oil or gas well must meet the minimum specifications for assemblies prescribed by the American Petroleum Institute in Standard 53, "Blowout Prevention Equipment Systems for Drilling Wells, Fourth Edition," or by its successor organization, or as may be otherwise prescribed by the Administrator.

2. Equipment for the prevention of a blowout which is capable of shutting in the well during operation must be installed on the surface casing and maintained in good operating condition at all times. The equipment must have a rating for pressure greater than the maximum anticipated pressure at the wellhead. The equipment must include casing outlet valves with adequate provisions for mud kill and bleed-off lines of appropriate size and working pressure.

3. An operator shall test the equipment for the prevention of a blowout under pressure immediately after installing the casing and the equipment at the wellhead. A representative of the Division must observe the test in person or otherwise approve the results of the test before the operator drills the shoe out of the casing. An operator shall notify the Division not less than 24 hours before conducting a test pursuant to this subsection.

4. The operator shall submit to the Division the pressure data and supporting information for the equipment for the prevention of a blowout as soon as practicable after the conclusion of the test. The operator shall record the results of each test in the daily drilling log of the operator.

Sec. 16.NAC 522.100 is hereby amended to read as follows:

522.100“Gas well” means a well which produces primarily natural gas or any well classified as a gas well by the Division. The term includes an exploratory well or a well that is otherwise drilled for exploratory purposes.

Sec. 17.NAC 522.115 is hereby amended to read as follows:

522.115“Oil well” means any well which is not a gas well and which is capable of producing oil or condensate. The term includes an exploratory well or a well that is otherwise drilled for exploratory purposes.

Sec. 18.NAC 522.210 is hereby amended to read as follows:

522.2101. Before any well is spudded in or drilled for oil or gas, application must be made to and a permit obtained from the Division.

2. The application must be made on Form 2, properly completed and accompanied by Form 1, the required fee and a location plat prepared by a land surveyor licensed in Nevada. Evidence of a federal bond for drilling on a federal lease must be included in the space provided on Form 2. The source and estimated volume of water required for drilling each well must be included with the application.

3. If the well is to be drilled on state or private land, Form 3 or 3a, properly completed, must accompany the application.

4. The Division will, upon the approval of an application for a permit to drill or a sundry notice (Form 4) for a permit to conduct a hydraulic fracturing operation, make a copy of the permit available on the Internet website maintained by the Division.

Sec. 19.NAC 522.265 is hereby amended to read as follows:

522.265Unless a special provision requires otherwise, the following applies to all oil and gas wells [drilled with rotary tools:

1. Suitable and safe surface casing must be used in all wells for proper anchorage. In all wells being drilled, surface and other protection casing must be run to sufficient depth to afford safe control of any pressures which might be encountered and must be sufficiently tested therefor. Surface casing must be set into an impervious formation and be cemented with sufficient cement to circulate to the top of the hole. If cement does not circulate, the annulus outside the casing must be cemented before drilling plug or initiating tests.

2. On all strings of casing below surface pipe, sufficient cement must be used to fill the annular volume behind the casing for a minimum distance of 500 feet above the bottom of the casing. A cement plug or shoe must not be drilled until a minimum compressive strength of 300 pounds per square inch at

bottom hole conditions has been attained according to the manufacturer's tables of cement strength for the particular cement mix being used.

3. After cementing the surface casing, each well being drilled must be equipped with adequate blowout preventers. The use of blowout equipment must be in accordance with good established oil field practice. The control equipment must include casing outlet valves with adequate provisions for mudkill and bleed-off lines of proper size and working pressure. All equipment must be in good operating condition at all times.] :

1. An operator shall install conductor casing and cement the annular space surrounding the conductor casing from the shoe to the surface with cement, cement grout or concrete grout.
2. An operator shall install surface casing to a depth of not less than 500 feet below the surface of the ground. The annular space surrounding the surface casing string must be cemented with sufficient cement to circulate to the top of the hole. If the cement does not circulate to the top of the hole, the operator shall:
 - (a) Measure the distance from the surface of the ground to the top of the cement and report the measurement to the Division.
 - (b) Take any remedial action that may be required by the Administrator to ensure compliance with NAC 522.260 before the operator resumes drilling or conducts any testing pursuant to this section.
3. Except as otherwise provided in section 11 of this regulation, each successive intermediate casing string or liner or production casing string or liner installed in a well below an existing casing string must overlap with the shoe of the existing casing string or liner, as applicable, by not less than 100 feet.
4. For each intermediate casing string or production casing string installed in a well, the operator shall cement the annular space surrounding the casing string to a depth of not less than 500 feet above the shoe of the casing string or, if the casing string enters a known hydrocarbon-producing zone of interest, to a depth of not less than 500 feet above the zone of interest.
5. As soon as practicable after an operator has completed the cementing of the surface casing string, an intermediate casing string or a production casing string, the operator shall submit to the Division a cementing evaluation report to ensure that the operator has complied with the cementing requirements prescribed by this section. The report must include, without limitation, the weight and volume of cementing materials used to cement the respective casing string and the pumping rates and pressures which are related to the cementing of the respective casing string.
6. If the Administrator determines that an operator must take remedial action to ensure compliance with NAC 522.260, the operator shall complete such remedial action before the operator resumes drilling or conducts any testing pursuant to this section.
7. Except as otherwise provided by section 11 of this regulation, before drilling the cement out of the bottom joints of the surface casing string, an intermediate casing string or a production casing string, an operator shall conduct a pressure test of the respective casing string in which the casing is pressurized to 0.22 pounds per square inch gauge (psig) per foot of casing string length or 1,500 pounds per square

inch gauge (psig), whichever is greater, not to exceed the maximum anticipated bottom-hole pressure or 80 percent of the burst-pressure rating of the casing. The casing string must be pressurized for a period of not less than 30 minutes. The operator shall submit to the Division the pressure test results for the respective casing string as soon as practicable after the conclusion of the test. If the results of the test indicate a drop in pressure of 10 percent or more, the operator shall notify the Division of a failed pressure test and shall immediately cease operations at the well. In the event of a failed pressure test, an operator shall not resume operations at the well until the Administrator approves a remediation plan, the operator successfully implements the plan and the operator conducts a successful pressure test for the respective casing string. A subsequent pressure test resulting in a drop in pressure of less than 10 percent after 30 minutes or more shall be deemed to be proof satisfactory that the condition has been corrected.

8. The Administrator may require the operator to submit a cement evaluation log evaluating the bonding integrity of the cement from the shoe of the surface casing string to the surface. The Administrator may require the submission of an initial cement evaluation log pursuant to this subsection if:

- (a) The Administrator determines that a significant amount of cement was lost during the cementing of the surface casing string; or
- (b) The surface casing string fails a formation integrity test conducted pursuant to subsection 10.

If the initial cement evaluation log does not indicate sufficient bonding integrity of the cement occupying the annular space, the Administrator may require the operator to submit a subsequent cement evaluation log evaluating the bonding integrity of the cement occupying the annular space. An operator shall provide to the Division a copy of each cement evaluation log required pursuant to this subsection as soon as practicable after a copy of the cement bond log becomes available to the operator.

9. An operator shall, upon completion of cementing operations with respect to an intermediate casing string or production casing string, submit to the Division a cement evaluation log evaluating the bonding integrity of the cement at the level of the respective casing string from the shoe of the casing string to the surface of the cement filling the annular space surrounding the casing string. If the initial cement evaluation log does not indicate sufficient bonding integrity of the cement occupying the annular space, the Administrator may require the operator to submit a subsequent cement evaluation log evaluating the bonding integrity of the cement occupying the annular space. An operator shall provide to the Division a copy of each cement evaluation log required pursuant to this subsection as soon as practicable after a copy of the cement bond log becomes available to the operator.

10. An operator shall, to verify that the cement and the formation below the casing shoe can withstand the wellbore pressure which is required to safely drill to the next depth at which casing will be installed, conduct a formation integrity or leakoff test at the time the operator drills the cement out of the bottom joints of the surface casing string, an intermediate casing string or a production casing string. The operator shall submit to the Division the results of a formation integrity or leakoff test conducted pursuant to this subsection as soon as practicable after the conclusion of the test. If the results of the formation integrity or leakoff test indicate a poor cement bond at the casing shoe, an operator shall not resume operations at the well until the Administrator approves a remediation plan, the operator successfully

implements the plan and the operator conducts a successful pressure test for the respective casing string to ensure compliance with NAC 522.260.

Sec. 20.NAC 522.342 is hereby amended to read as follows:

522.3421. The amount of the administrative fee that a producer or purchaser of oil or natural gas must pay pursuant to subsection 2 of NRS 522.150 is [10] 15 cents per barrel of oil or per 50,000 cubic feet of natural gas, as appropriate.

2. The administrative fee must be paid on or before the last day of each month and must be prorated to reflect the amount of oil or natural gas produced during the preceding month.

Sec. 21.NAC 534A.270 is hereby amended to read as follows:

534A.270 1. [All necessary] An operator shall take all precautions [must be taken] which are necessary to keep wells under control and operating safely at all times. Well control and wellhead assemblies used in any geothermal well must meet the minimum specifications for assemblies prescribed by the American Petroleum Institute in Standard 53, "Blowout Prevention Equipment Systems for Drilling Wells, Fourth Edition," or by its successor organization, or as may be otherwise prescribed by the Administrator.

2. Equipment for the prevention of a blowout, capable of shutting in the well during any operation, must be installed on the surface casing and maintained [ready for use] in good operating condition at all times. This equipment must [be made of steel and] have a rating for pressure [equal to] greater than the maximum anticipated pressure at the wellhead. Equipment for the prevention of a blowout is required on any well where temperatures may exceed 250°F.

3. [Immediately after installation, the casing and] An operator shall test the equipment for the prevention of a blowout [must be tested] under pressure. [These tests must be witnessed by] A representative of the Division must observe the test in person or otherwise approve the results of the test before the [guide] operator drills the casing shoe [is drilled] out of the casing. [The Division must be given reasonable notice of any such test. If necessary, conductor pipe must be equipped with annular blowout equipment which is hydraulically activated from a remote control station.] An operator shall notify the Division not less than 24 hours before conducting a test pursuant to this subsection.

4. The [use of any equipment for the prevention of a blowout must be in accordance with established good practices of the oil field.] operator shall submit to the Division the pressure data and supporting information for the equipment for the prevention of a blowout as soon as practicable after the conclusion of the test conducted pursuant to subsection 3. The operator shall record the results of each test in the daily drilling log of the operator.

Sec. 22.NAC 522.270 and 522.343 are hereby repealed.

TEXT OF REPEALED SECTIONS

522.270 Wells drilled with cable tools. The following applies to all wells drilled with cable tools:

1. Before drilling begins, adequate slush pits must be constructed.
2. Surface casing must be set in the same manner as described in NAC 522.265. Surface casing must be tested by bailing or pressure test to ensure a shutoff before drilling proceeds below the casing point.
3. The use of blowout equipment must be in accordance with good established oil field practice. After cementing the surface casing, a well being drilled must be equipped with adequate blowout preventers. All equipment must be in good operating condition at all times.

522.270 Reduced administrative fee for new production. (NRS 522.040, 522.150)

1. Notwithstanding the provisions of NAC 522.342, the amount of the administrative fee that a producer or purchaser of oil or natural gas must pay pursuant to subsection 2 of NRS 522.150 for new production is one-half cent per barrel of oil or per 50,000 cubic feet of natural gas, as appropriate, and in accordance with the provisions of this section.
2. Upon the filing of Form 5, the well completion report, pursuant to NAC 522.510, the Division shall determine whether the production from the well that is the subject of the report qualifies as new production. If the Division determines that the production from the well qualifies as new production, the producer or purchaser is entitled to pay the administrative fee required by subsection 2 of NRS 522.150 for that new production at the reduced rate prescribed in subsection 1 for 12 consecutive calendar months, beginning on the put-on-production date reported in Form 5 for that well. At the end of the 12-month period, the producer or purchaser must pay the administrative fee required by NRS 522.150 for further production from the well in the amount prescribed in NAC 522.342.
3. A producer or purchaser may, pursuant to NRS 522.110, challenge a determination made by the Division pursuant to subsection 2.
4. As used in this section, "new production" means production from a new or existing well that is completed in a new interval, as determined by the Division.

Appendix G: List of Acronyms and Abbreviations

APD	Application for Permit to Drill
AQRV	air quality related values
BLM	Bureau of Land Management
BMDO	Battle Mountain District Office
BMPs	Best Management Practices
CESA	Cumulative Effects Study Area
CFR	Code of Federal Regulations
COAs	Conditions of Approval
CSU	Controlled Surface Use
DOI	United States Department of the Interior
EA	Environmental Assessment
EO	Executive Order
ESA	Endangered Species Act
EPA	Environmental Protection Agency
FLPMA	Federal Land Policy and Management Act of 1976
GHG	greenhouse gas
GHMA	General Habitat Management Area
GIS	Geographic Information System
GRSG	Greater Sage-Grouse
GRSG Plan Amendment	2015 Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment
GWP	Global Warming Potential
HAPs	hazardous air pollutants
HF	hydraulic fracturing
HMA	Herd Management Area

ID Team	interdisciplinary team
IM	Instruction Memorandum
MD	Management Decision
MLFO	Mt. Lewis Field Office
MOU	Memorandum of Understanding
MR	Mineral Resources
NAAQS	National Ambient Air Quality Standards
NAC	Nevada Administrative Code
NDOW	Nevada Department of Wildlife
NEPA	National Environmental Policy Act
NDA	Nevada Department of Agriculture
NDWR	Nevada Division of Water Resources
NDWQ	Nevada Division of Water Quality
NHPA	National Historic Preservation Act
NNHP	Nevada Natural Heritage Program
NSO	No Surface Occupancy
NVSO	Nevada State Office
OHMA	Other Habitat Management Area
PHMA	Priority Habitat Management Area
PL	Public Law
RFD	reasonably foreseeable development
RFFA	reasonably foreseeable future action
RMP	Resource Management Plan
ROW	Right-of-Way
SFA	Sagebrush Focal Area
SHPO	Nevada State Historical Preservation Office

TFO	Tonopah Field Office
TL	Timing Limitation
tpy	tons per year
U.S.	United States
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
VRM	Visual Resource Management

Appendix H: Summary of Comments and Responses

Public Comments and BLM Responses

June 2017 Oil and Gas Lease EA, Battle Mountain District

CBD: Center for Biological Diversity, My-Linh Le

David Currey

Duckwater Shoshone Tribe, Rodney Mike

Eureka County Board of Commissioners

FNW: Friends of Nevada Wilderness, Kirk Peterson

Morris Pollock

NDOW: Nevada Department of Wildlife, D. Bradford Hardenbrook

NDWR: Nevada Division of Water Resources, via State Clearinghouse

Nevada State Clearinghouse

TRCP: Theodore Roosevelt Conservation Partnership, Carl Erquiaga

TWS: The Wilderness Society, Juli Slivka

USFWS: U.S. Fish and Wildlife Service, Carolyn Swed

Western Shoshone Nation, Johnnie L. Bobb

WEG: WildEarth Guardians

Approximately 8000 form letter emails sent via WildEarth Guardians website

Comments are summarized and grouped by topic. For full comment letters and attachments see

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Sales\2017_Lease_Sale\NEPA\PublicComment

Commenter	Comment	Response
Native American concerns		
Western Shoshone Nation	Lands described in the EA are within the boundaries of the Western Shoshone Nation as identified in the Treaty of Ruby Valley with the Western Shoshone, U.S.-W. Shoshone, Oct. 1, 1863, 18 Stat. 689. BLM did not consult with the Western Shoshone Nation prior to the EA, thus violating the treaty. Support a No Leasing Alternative.	We appreciate the Western Shoshone Nation's input. BLM is required to coordinate and consult with Federally-recognized tribes. The Western Shoshone Nation is not a Federally-recognized tribe. For this EA BLM worked with the Duckwater Shoshone Tribe, Yomba Shoshone Tribe, and the Te-Moak Shoshone Tribe. See EA section 1.5, subheading Native American Coordination.
Duckwater Shoshone Tribe	Tribe requested deferral of several parcels based on Native American cultural concerns; conducted site visits with Native American Coordinator and identified locations of concern; BLM protocol requires BLM to keep location data confidential. The Tribe believes that it has shared enough information	The Tribe indicated to BLM that they are aware of a general area (several parcels) within which one or more specific locations of concern exist, but the exact locations are not currently known to the Tribe. BLM informed the Tribe that a lease notice will be attached to each parcel stating that BLM will not approve any ground-disturbing activities until meeting its tribal consultation

	with the BLM to warrant protection and deferral from future oil and gas leases.	obligations (EA Appendix B, #NV-B-07-A-LN). If and when a ground-disturbing project is proposed on any parcel that may be leased, BLM would work with the Tribe to closely examine the area that would be disturbed.
Air quality		
CBD, WEG	<p>CBD: BLM failed to adequately disclose or analyze the project's harm to air quality and climate change.</p> <p>WEG: The EA fails to account for indirect greenhouse emissions; to account for greenhouse gas emissions from cumulative and similar actions; and to analyze the costs of reasonably foreseeable carbon emissions using well-accepted, valid, credible, GAO-endorsed, interagency methods for assessing carbon costs that are supported by the White House</p>	We have augmented the Air Quality, Climate Change, and Greenhouse Gases sections of the EA (3.2.1 and 4.2.1) according to new BLM guidance that was issued since the preliminary EA was prepared.
Special status amphibian and fish species		
USFWS	Great Basin Distinct Population Segment, Columbia spotted frog in Parcel 14. Species is protected under Nevada Administrative Code 503.075; per 503.090 and 503.093, no person shall capture, kill or possess without written permission from NDOW. BLM is signatory to a conservation agreement. USFWS asks we ensure project is consistent with agreement. USFWS asks that this parcel be included in deferral.	Part of Parcel 14 is included in the Partial Deferral Alternative as proposed for deferral. Parcel 14 in its entirety is included among parcels to which the Water Resources stipulation would be applied under the Additional Resource Protection Alternative. We have added discussion of Columbia spotted frog on this parcel to the revised EA, in response to the information USFWS provided.
USFWS	Lahontan cutthroat trout (LCT), ESA-listed as Threatened: Parcel 37 in Diamond Valley/Range overlaps occupied habitat; Parcels 15, 27, 28, 30, 31, 32 in Big Smoky Valley "within range of ground-disturbing influence." Proposed lease area is located within a potential metapopulation for LCT; may be necessary for LCT recovery, although a self-sustaining population may not be currently present. "Completed projects should not preclude future recovery and survival." Recommend review	We have added discussion of LCT in relation to Parcel 37 to the revised EA. In subsequent conversations and email exchange, USFWS considered BLM input and USFWS location data, determined that the Big Smoky Valley parcels are not of concern regarding LCT and withdrew the request to defer them. USFWS considered BLM information that although maps show Pete Hanson Creek terminating in Parcel 37, it is several miles downstream of perennially flowing parts of the stream with known LCT habitat; USFWS stated that BLM should consider whether the parcel can be connected with occupied habitat during times of high flow. On March 27 2017, the

	<p>projects for direct and indirect impacts on aquatic and riparian habitats as they relate to LCT, and that BLM consult with USFWS under Section 7 of ESA. USFWS asks that these parcels be included in deferral.</p> <p>USFWS asks to discuss some of the effects analysis in the EA with BLM, as it will relate to the analysis in the upcoming biological assessment.</p>	<p>BLM wildlife biologist and surface water hydrologist conducted a site visit to Pete Hansen Creek's lower reaches on Parcel 37. At the time of their visit, following an unusually wet winter, stream flow was constant and there was evidence of recent flooding. They concluded that this intermittent reach of Pete Hanson Creek is not capable of providing suitable habitat for Lahontan cutthroat trout, as the channel geomorphology is such that any floodwaters capable of conveying trout from their upstream habitat would be too shallow and/or carry too much sediment (see Wildlife section 3.2.8). However, Parcel 37 is included among parcels to which the Water Resources stipulation would be applied under the Additional Resource Protection Alternative due to wetland areas on/near the parcel.</p> <p>A lease notice is attached to <i>all</i> lease parcels stating that BLM will not approve any ground-disturbing activity that may affect listed species until it completes its obligations under applicable requirements of the ESA, including any required procedure for conference or consultation (see EA Appendix B, Lease Notice #NV-B-06-A-LN).</p>
<p>USFWS and NDOW</p>	<p>USFWS: Pleasant Valley tui chub in parcels 14, 20, 21; Fish Creek Springs tui chub within 700m of parcel 66; speckled dace within 400m of parcel 55. USFWS asks that these parcels be included in deferral.</p> <p>NDOW: Parcel 66: Fish Creek Springs Tui Chub (endemic, State protected) is found exclusively on nearby private land. Drilling has the potential to disrupt source waters resulting in adverse impacts to nearby spring system function and related consequences to the tui chub. We recommend Parcel 66 be deferred from sale until credible, science-based data provides confidence in the compatibility of oil and gas activities and the persistence of the spring system supporting tui</p>	<p>Subsequent conversation with USFWS clarified that Pleasant Valley tui chub do not occur in the Battle Mountain District, and any tui chub on parcels 14, 20 and 21 are expected to be Big Smoky Valley tui chub. We have corrected the preliminary EA's reference to Pleasant Valley tui chub on parcel 14; added discussion of Fish Creek Springs tui chub within 700m of parcel 66, and speckled dace within 400m of parcel 55; and added discussion of potential effects to these sensitive fish.</p> <p>The EA acknowledges a slight risk for activities associated with oil and gas exploration, development and production to disrupt or contaminate any nearby spring flows in Section 3.2.4, Water (Surface and Ground) Quality and Quantity. Any future application for a permit for such activities would trigger further site-specific, project-</p>

	chub prior to exploration or development. At a minimum, no hydraulic fracturing is requested, to avoid any compromise of hydrologic function or fouling of groundwater sources supplying springs upon which endemic, isolated, threatened or endangered populations of aquatic wildlife depend.	specific NEPA analysis which would include close consideration of how that risk could affect any nearby sensitive species. Lease Notice #NV-B-06-A-LN, attached to all parcels, includes a statement that BLM may recommend modifications to exploration and development proposals for conservation of special status species or their habitat (EA Appendix B).
Greater Sage-grouse habitats		
USFWS	Sage-grouse leks and priority habitat, parcels 34, 36, 37, 38, 39, 40: USFWS notes existing policy to apply stipulations, required design features and other management measures, and encourages BLM “to defer priority habitats first.”	Per BLM policy, no parcels were proposed for deferral for reasons of sage-grouse habitat because the GRSG Plan Amendment provides sufficient stipulations, required design features, and other management measures. See EA Appendix B for parcels to which GRSG stipulations are applied. These include the parcels USFWS names, under stipulations for PHMA and for proximity to leks.
NDOW	NDOW recommends managing Parcel 58 as GRSG PHMA, based on vegetation type and telemetry data. NDOW: Although sage-grouse seasonal habitat consultation has not yet occurred and could ideally be initiated by lease sale, should activity move forward to development of parcels leased, NDOW anticipates reasonable lead time for interagency consultation prior to NEPA initiation.	BLM is currently directed to use USGS delineations of PHMA, GHMA, etc. as per the GRSG Plan Amendment and any updated maps adopted by USGS and BLM; and to rely on NDOW expertise to identify seasonal habitats within those categories. We anticipate that USGS and BLM will work together with NDOW in updating and improving sage-grouse habitat delineation over time.
TRCP	The EA does not fully integrate management and conservation measures required under the GRSG Plan Amendment. All requirements, including NSO stipulations in priority habitat, need to be addressed in the EA.	All GRSG Plan Amendment requirements are addressed. See Appendix B for stipulations applied as required, including #NV-B-16-A-NSO stipulation in PHMA.
Mule deer and pronghorn habitats		
NDOW and TRCP	NDOW: Leasing stipulations should include timing protection restrictions during the period November 1 to April 30 (no oil and gas development activity would occur during these months) for mule deer crucial winter range: parcels 42-45, 48, 49, 53-56,	We have included the parcels NDOW named among parcels to which Timing Limitation stipulations will be applied for mule deer or pronghorn winter range, and/or Lease Notice for mule deer movement corridors. See Appendix C.2.

	<p>61, 66, 83, and 91; pronghorn crucial winter range: 33, 35, 38, 44, 58, 59, and 62; mule deer movement corridors: 42-44, 49-57, 60, 61, 63-66-68, 74, 83, 86-88, 90-94, and 104.</p> <p>TRCP: BLM should defer leasing of any important wildlife habitats, including big game seasonal range and migration corridors, until RMP revision or a master leasing plan (MLP) can be completed. RMP revisions are necessary prior to leasing. Stipulations addressing mule deer and pronghorn winter range and pronghorn kidding areas are applied geographically based on outdated data, not current habitat information. Address displacement effects from seasonal habitats, as identified by stipulations.</p>	
General/other wildlife concerns		
NDOW	<p>NDOW supports the Partial Deferral Alternative. NDOW appreciates that most of their scoping (pre-EA) input was taken into account. The proposed deferrals, timing limitations and lease notices will protect key habitats such as desert playa, springs, riparian corridors, and associated, priority wildlife including the Greater Sage-grouse, Desert Bighorn Sheep, Mule Deer, Pronghorn Antelope, native fishes, bats and migratory birds. NDOW looks forward to participating in future, additional site-specific analysis; and to working with BLM and USFWS in developing fluid minerals stipulations more adequately addressing hydrologic features that will protect aquatic or riparian obligates dependent on groundwater, and associated ecosystem services.</p>	Thank you for your comments.
NDOW	<p>Parcel NVN77856 Reinstatement: The parcel, located in Railroad Valley, contains Bullwhacker Spring and Thorn Spring. Springs provide crucial habitat to a number of endemic, spring-dwelling aquatic</p>	<p>When any project is proposed on any parcel that is leased, additional site-specific, project-specific NEPA analysis would be conducted and mitigation measures and BMPs would be attached as COAs for each proposed activity.</p>

	species in Nevada and also provide a vital water source between infrequent surface waters for a wide range of wildlife. A lease sale of NVN77856 makes Bullwhacker Spring and Thorn Spring vulnerable to indirect effects of oil and gas development similar to those identified for Parcel 66. We do understand reinstatement parcels or parts of reinstatement parcels are not eligible for deferral, and there are no stipulations in the existing RMPs to resolve concerns for hydrologic features.	
CBD	BLM failed to adequately address potential impacts to sensitive species.	Sensitive species are addressed in EA sections 3.2.8 and 4.2.8. The final EA incorporates additional sensitive species information that USFWS and NDOW provided to us during the public comment period.
TRCP	There is no evaluation of indirect effects of infrastructure and human activity (i.e., behavioral modifications that could render surrounding habitat unsuitable for sage-grouse, mule deer and pronghorn, possibly at a considerable distance from the site.	See EA Sections 3.2.8 and 4.2.8: “In general, animals capable of doing so would avoid and move away from the associated noise and activities...”; “areas [protected via deferral or stipulations] would not be subject to the general potential effects described for the Proposed Action, involving temporary displacement of animals due to noise and activity”; “seasonal utilization by wildlife such as greater sage-grouse, mule deer, desert bighorn sheep, and migratory birds may be impacted.” Timing Limitation stipulations are applied to seasonal habitats for all of these species; see Appendices B and C.
TRCP	The EA should include a commitment to fund wildlife management, monitoring, and restoration for oil and gas development projects.	Monitoring and reclamation of any oil and gas activities is required under 43 CFR 3100 regulations and would be carried out as standard practice. Operators are required to establish a bond prior to approval of any surface disturbing operations. Any specific commitment to funding wildlife activities is beyond the scope of this EA and would exceed the BLM’s authority at this point.
Invasive species		
Eureka County	Please acknowledge and include the Diamond Valley Weed Control	We have added a statement to Section 3.2.7 that the Diamond Valley Weed Control

	District as a local governmental entity that must be coordinated with for weed control efforts within its boundaries (which is nearly all of Diamond Valley and many areas adjacent to Diamond Valley). NAC 555.050 and 555.060 are weed control regulations specific to the Diamond Valley Weed Control District and there are some species that require control in Diamond Valley that are not on the State noxious weed list also highlighted in NAC 555 (e.g. foxtail barley).	District encompasses nearly all of Diamond Valley and many areas adjacent to Diamond Valley, and any activities within this District would need to comply with applicable requirements.
Rangelands		
Eureka County	“Rangeland Resources” sections should be renamed “Livestock Grazing.” Rangeland resources are more than just livestock grazing; nearly all analyzed resources are “rangeland resources.”	BLM often uses these terms interchangeably in identifying an EA section. The “Rangeland Resources” sections of this EA discuss potentially-affected resources from the perspective of livestock grazing concerns. “Rangeland Resources” may encompass a broader meaning which can include not only changes in forage production, range improvements, potential changes in distribution, etc. but also all of the natural resources on which livestock depend.
Geophysical and hydrological concerns		
CBD	The EA fails to take a hard look at the potential impacts from use of hydraulic fracking technologies and other unconventional extraction techniques.	See Appendix E.
CBD	BLM failed to take a hard look at impacts to water resources.	Impacts to water resources are addressed in EA sections 3.2.4 and 4.2.4.
CBD	VII. BLM failed to take a hard look at the risks of induced seismicity or other geological hazards.	The risks of induced seismicity and other geological hazards are addressed in Appendix E.
Eureka County	Section 3.2.4- Please include more discussion on water rights processes, the general groundwater use requirements of the expected activities, and Diamond Valley and its status as the only currently designated Critical Management Area (CMA) in Nevada. There is no discussion in the EA about the amount of groundwater that would be needed for operations and the differences in how groundwater may be appropriated and used in different	Waters of the State of Nevada are managed by the NV Division of Water Resources and the NV State Engineer. Any water required for drilling or completion operations would be acquired by the operator in accordance with State law from an existing permitted appropriation, or from a temporary diversion or water well permit from the NV State Engineer. When any project is proposed on any parcel that is leased, additional site-specific,

	<p>basins with different levels of administration and regulation by the NV State Engineer. In addition to orders by the NV State Engineer prohibiting any new appropriations of groundwater, the CMA designation would require all activities in Diamond Valley using groundwater to fall under the Groundwater Management Plan. This should be disclosed so entities interested in bidding on leases in Diamond Valley are at least put on minimal notice.</p>	<p>project-specific NEPA analysis would be conducted and mitigation measures and BMPs would be attached as COAs for each proposed activity.</p>
NDWR	<p>A waiver for the use of groundwater from a new or existing water well may be allowed for the exploration phase, which may include drill pad construction, dust control/road work, oil and gas well and test well construction, and miscellaneous uses associated with this phase; however, a water right permit is required for any subsequent use of water beyond the exploration phase including, but not limited to, water used for the hydraulic fracturing process during the oil and gas well development stage.</p>	<p>Waters of the State of Nevada are managed by the Nevada Division of Water Resources and the Nevada State Engineer. BLM does not regulate groundwater. If the Nevada Division of Environmental Protection issues a water permit, the BLM cannot override this decision.</p>
Wilderness characteristics		
TWS	<p>In updating its wilderness inventory, BLM did not conduct field inventory of all units.</p>	<p>Field inventory is not required for all units. Often, inventory units can be clearly shown not to meet the criteria based on desktop review.</p>
TWS	<p>BLM incorrectly states wilderness characteristics are “not present.” BLM has failed to respond to new information submitted by the public regarding lands with wilderness characteristics. Eleven proposed lease parcels are within the Sulphur Springs inventory unit, for which Friends of Nevada Wilderness (FNW) submitted information to BLM in June 2016; BLM has not responded. BLM has not responded to other citizen-submitted inventories since BLM’s update in 2013. BLM has ignored significant new information, thus</p>	<p>BLM Battle Mountain District undertook its most recent comprehensive wilderness characteristics inventory as part of the process of updating the RMP. BLM used the FNW inventory to focus on areas they identified, while conducting the agency’s own inventory as required. BLM determined that while 12 of 14 units suggested by FNW did have wilderness characteristics, two including the Sulphur Springs unit did not; and updated our GIS layer accordingly. Subsequently the RMP update was put on hold. The District intends to update the inventory again in 2017, and will follow through with formal documentation.</p>

	failing to take the required “hard look” at potential effects to a resource.	
TWS	BLM should defer all parcels that have wilderness characteristics as identified by FNW and/or by TWS as likely to meet BLM’s criteria for having wilderness characteristics. BLM has failed to evaluate an adequate range of alternatives that would protect wilderness characteristics.	BLM policy requires considering external input but ultimately relying on the agency’s own inventory. BLM’s inventory did not find wilderness characteristics on any of the proposed parcels.
FNW	Chapter 3 does not include an impact analysis for Lands with Wilderness Characteristics. A number of parcels are within areas currently under consideration for LWC. The following parcels are all or partially within the Sulphur Springs (NV-060—543) 29,916-acre LWC unit under consideration for the upcoming BMDO RMP: NV-17-06-053, 054, 055, 056, 057, 060, 061, 063, 064, 065, 083. FNW recommends that these parcels be removed from the lease sale and that impacts on LWC are addressed in Chapter 3 of the EA.	There is no designation "Lands with Wilderness Characteristics," "LWC," or "LWC unit." Inventories are conducted for wilderness characteristics as defined by the 1964 Wilderness Act, within wilderness inventory units such as the Sulphur Springs unit. As stated in Chapter 3, Table 1, an inventory conducted in 2012-2013 found no wilderness characteristics in the units which encompass the currently-proposed lease parcels. The inventory would be updated as part of the additional NEPA review that would be conducted at the time of any application for permit to drill or for any other specific project work on any leased parcel. If wilderness characteristics are found, potential effects to this resource would be addressed in the additional site-specific, project-specific NEPA analysis.
Recreation		
FNW	No mention of impact on access for recreation. The most egregious example involves parcel NV-17-06-001 and NV-17-06-002. Developing and closing off these parcels could compromise access to one of the most outstanding recreational-trail systems in the state of Nevada: the North Twin Trail, the South Twin Trail, the Toiyabe Crest Trail, and impact access to the Arc Dome Wilderness. This EA should provide detailed maps of recreational trails (both vehicular and non-vehicular) and recreational use areas on BLM, USFS, and State of Nevada lands throughout the project area and detailed analysis of how access could	The trails mentioned are on Forest Service lands. There are many access points to these trails outside of the parcels.

	be impacted.	
TRCP	By degrading/fragmenting wildlife habitat, increasing wildlife disturbance, and increasing development and use of travel routes, oil and gas development could impact wildlife-based dispersed recreation (hunting, fishing, wildlife viewing), other “quiet recreation,” and public safety.	Potential impacts to recreation are addressed in EA sections 3.2.13 and 4.2.13. Potential impacts to wildlife are addressed in EA sections 3.2.8 and 4.2.8.
Effects to human communities		
CBD	VIII. BLM failed to adequately disclose or analyze the human health and safety risks posed by unconventional extraction techniques.	Please see Appendix E regarding potential effects of HF.
CBD	BLM failed to take a hard look at the impacts to minorities or low income populations.	An Environmental Justice analysis has been added to the revised EA.
Nevada State Clearinghouse	Requested dark sky lighting requirements.	Thank you for your comment. These will be implemented at the time of any proposal for exploration or development.
NEPA and oil & gas policy issues		
CBD	BLM violates NEPA by failing to undertake a site-specific analysis.	The EA analyzes resources present on the parcels proposed for leasing, along with potential effects to those resources. The ID Team conducted field tours of the parcels along with a thorough desktop review; applied specific resource-protective stipulations and lease notices to individual parcels as appropriate (Appendix B); and proposed new stipulations for those specific parcels having resources not protected by existing stipulations and lease notices (Appendix C). If or when a project is proposed on any parcel that may be leased, additional site-specific, project-specific analysis would be conducted. All required state and federal regulations would apply, and further COAs and mitigation measures may be applied.
TWS and CBD	BLM is making the mistake of concluding that any impacts of the proposed leases would be insignificant or can be mitigated through existing lease stipulations. The EA fails to provide a statement of reasons as to why the project’s impacts are insignificant.	An EA does not reach any conclusion regarding significance. The Authorized Official uses information in the EA in determining significance, and may then either select an alternative without significant impacts and publish a Finding of No Significant Impact (FONSI), or require further mitigation for any significant impacts; require an EIS; or deny the

	BLM must prepare an Environmental Impact Statement (EIS).	proposal.
TWS	BLM must select the Partial Deferral Alternative. BLM developed this alternative to address resource concerns regarding sensitive wetlands, seeps and/or springs, floodplains, playas, steep slopes, and a segment of the Pony Express National Historical Trail. However, the proposed action would result in offering all of the nominated lease parcels without these stipulations, apparently in contradiction of BLM's intentions for addressing the resource concerns.	The Proposed Action is not a "preferred alternative." Rather, it is (in this case) the action proposed to BLM by those who nominated the parcels for inclusion in the lease sale. The Authorized Official has the discretion to select any of the analyzed alternatives, either in their entirety or in part.
TWS	BLM impeded public participation by failing to provide a pre-EA scoping opportunity. Cites IM 2010-117. BLM failed to follow "the customary practice" of publishing an online schedule of public participation opportunities for the lease sale. TWS would like to be able to rely on consistent BLM practices nationwide.	BLM Washington Office IM 2010-117 states, "Scoping for these EAs is optional; however, the interdisciplinary review of lease sale parcels will provide input on the issues, impacts, and potential alternatives to be addressed in the EA." This nationwide guidance was followed.
TWS	BLM impeded public participation by failing to provide geospatial data for the proposed lease parcels.	The BLM Nevada State Office informed Battle Mountain District that until the geospatial system is updated we are not authorized to give out shapefiles to the public. However, once the parcels are finalized all of our Oil and Gas Sales will be held online through EnergyNet site, with a shapefile that identifies the parcels. https://www.energynet.com/govt_listing.pl
CBD, WEG	CBD: The EA underestimates activities likely to occur as result of lease sale. WEG: The BLM's Reasonably Foreseeable Development analysis is suspect. It is astonishing that BLM would project such a small amount of development resulting from the proposed leases.	As explained in EA Section 2.4.1, the BLM's Reasonably Foreseeable Development (RFD) scenario is based on recent exploration, development and production activity in the Battle Mountain District, along with low to moderate geological potential for future development. The well and surface disturbance numbers stated in the RFD have yet to be exceeded in the District, and based on the past 10 years overstate the amount of development that could be expected in the district.

		Nationwide, roughly 37% of onshore Federal land acreage under lease produced oil and gas. Nevada represents less than 1% of total leases on Federal Lands within the United States and two tenths of 1% of the production acreage. In Nevada, between 1984 and 2015, Federal land acreage under lease producing oil and gas averaged 3% and the producing acreage averaged 2%. Most leases expire without exploration or production ever taking place.
Eureka County	The EA includes no description or discussion of possible conflicts between BLM and Eureka County plans, policies, controls, and laws. Nearly 70% of the parcels are within the County; BLM should have coordinated with Eureka County, per FLPMA Section 202(c)(9) requirements regarding “land use inventory, planning, and management activities.”	We sent Eureka County a notice of the EA’s availability for public comment. Thank you for your response. We have considered your input carefully.
TRCP	BLM should consider geographically-phased energy exploration and development prior to the leasing stage to responsibly balance the needs of fish and wildlife with energy extraction. Large geographic areas to be offered for oil and gas leasing first should be subdivided into smaller parcels to be leased – each identifying crucial habitats and migration corridors that maintain fish and wildlife populations and ecological function. A Master Leasing Plan (MLP) can identify appropriate scales and ensure that development does not exceed a cumulative effects threshold before earlier impacts are restored or mitigated. Address habitat conditions in a larger, surrounding area, including what is needed to sustain populations per NDOW objectives. We recommend an MLP be considered for the northeast corner of the Mt. Lewis FO in conjunction with part of adjacent Elko District with previous leases and documented interest in oil and gas leasing.	<p>Oil and gas leasing and exploration continues to be highly speculative as evidenced by the fact that, according to the Nevada Bureau of Mines and Geology, of the 270 wells drilled since 1986 only 50 produced commercial quantities of hydrocarbon products.</p> <p>Large geographic areas for example Big Smoky and Diamond Valleys have been subdivided into smaller parcels and crucial habitats have been analyzed and appropriate protection measures applied.</p> <p>Given the protection measures available to BLM and the speculative nature and current state and density of exploration and development in Nevada, and that expected in the Reasonably Foreseeable Development scenario, the BLM is not required to prepare a Master Leasing Plan at this time.</p> <p>From the Leasing Reform IM 2010-117: The preparation of an MLP is required when all four of the following criteria are met:</p> <ul style="list-style-type: none"> • A substantial portion of the area to be analyzed in the MLP is not currently leased. • There is a majority Federal mineral

		<p>interest.</p> <ul style="list-style-type: none"> • The oil and gas industry has expressed a specific interest in leasing, and there is a moderate or high potential for oil and gas confirmed by the discovery of oil and gas in the general area. • Additional analysis or information is needed to address likely resource or cumulative impacts if oil and gas development were to occur where there are: <ul style="list-style-type: none"> ○ multiple-use or natural/cultural resource conflicts; ○ impacts to air quality; ○ impacts on the resources or values of any unit of the National Park System, national wildlife refuge, or National Forest wilderness area, as determined after consultation or coordination with the NPS, the FWS, or the FS; or ○ impacts on other specially designated areas
WEG and TWS	<p>Request BLM defer all proposed parcels from lease sale, and find that the lands proposed for leasing should be unavailable for future leasing, based on low percentage of leased lands in Nevada actually producing oil and gas; low development potential in the District. Any leases issued would be speculative. Industry uses leases to inflate their assets, while taxpayers pay for administration, inspection and enforcement. Speculative leasing ties up public lands, creates unnecessary public conflict, and generates minimal revenue. Existing oil and gas leases tend to preclude protective management of other resources, thus restricting BLM's ability to manage for other multiple uses.</p>	<p>This suggestion is beyond the scope of this EA, as it is counter to existing federal policies.</p>
WEG	<p>Ask that BLM at least consider an alternative that imposes a minimum bonus bid higher than \$2.00 per acre; and an alternative that defers the proposed parcels until at least 50% of all leased federal oil and gas acres</p>	<p>This suggestion is beyond the scope of this EA, as it is counter to existing federal policies.</p>

	in Nevada are put into production, via leases expiring, being relinquished, or being put into production.	
TWS	If BLM moves forward with any oil and gas leasing in the District prior to completing additional planning, the agency should implement interim measures to protect public lands resources that are encumbered by leases. These could include a applying more protective stipulations and/or conditions of approval through leasing EAs, or attaching lease notices for specific resources, including for potential mitigation requirements.	Policy at the time of the preliminary EA was that stipulations must be included in an existing RMP; currently, we are directed that we may apply protective stipulations via this EA. Lease notices must be based on existing laws. See EA Appendix B for pre-existing stipulations and lease notices, and the parcels to which they apply. See EA Appendix C.2 for new proposed stipulations and parcels to which they would be applied under the Additional Resource Protection Alternative.
David Currey	Objects to further deferral of parcels 4-50. Several of these were nominated for the 2016 sale and were deferred. Several parcels constitute a part of a broader plan of exploration that is dependent on the collective acreage being under lease to establish a critical mass for the overall project. The Battle Mountain RMP was initiated several years ago and there seems to be no substantial progress and no schedule to complete it, leaving an open-ended deferral of the parcels. This puts an undue burden on the lessee and gives the appearance that reasonable efforts are not being made to lease the oil and gas resources on the nominated parcels.	<p>BLM policy is to make lands available for leasing if they are open to leasing in the current RMP.</p> <p>Under the guidance that was current for the preliminary EA, stipulations could only be created and imposed via the RMP process. Therefore, parcels were proposed for deferral from leasing if the current RMP did not provide adequate protective stipulations for important resources known to exist on the parcels. The recommended future stipulations for each parcel proposed for deferral under the Partial Deferral Alternative are listed in Appendix C.1.</p> <p>Under new direction from the BLM Nevada State Office, if the current RMP does not provide adequate protective stipulations, instead of deferring parcels from leasing until the RMP is updated, appropriate stipulations may be created and applied via the EA process. The Additional Resource Protection Alternative analyzes this option. The new stipulations are listed in Appendix C.2.</p>
Concerns about better defining playas, wetlands, floodplains		
Eureka County and David Currey	<p>“Playa” areas of concern should be better defined.</p> <p>Eureka County: Parcels proposed for deferral under Partial Deferral Alternative include the entire dry</p>	Playas were geographically defined from USGS National Hydrographic Dataset (NHD) Waterbody GIS layer. USGS describes “playa” as a flat area at the lowest part of an undrained desert basin, generally devoid of vegetation, in a location where

	<p>lake bed/playa in northern Diamond Valley. The definition of "playa" in Appendix C is "ephemeral round depressions within area of dry lake beds in which water collects after a rain event and evaporated relatively quickly." Much of the large playa in Diamond Valley does not meet this definition: is always dry, has large expanses of bare, alkali ground, and has little-to-no land use conflicts (i.e., there is no forage for wildlife, livestock, or wild horses and there are no high value recreational opportunities there). Also, there has been substantial oil and gas exploration across the area in the past. We ask that BLM work with Eureka County to determine which areas of the Diamond Valley large playa should actually be deferred from lease (e.g., actual small playa areas) and allow the areas that do not have high resource concerns and land use conflicts to move forward for lease.</p> <p>David Currey: Objects to No Surface Occupancy "riders being attached" (i.e. proposed stipulations for updated RMP) without the parcels being first properly surveyed on the ground for the appropriate concerns, including playa conditions, with "a stipulation of the nature of the detrimental concern."</p>	<p>ephemeral lakes form during wet periods. Although playas may be dry during most years, or water may cover only the lowest parts or parts near water sources such as springs or ephemeral streams, they may be completely covered by ephemeral lakes in wet years.</p> <p>Under new direction from the BLM Nevada State Office, if the current RMP does not provide adequate protective stipulations, instead of deferring parcels from leasing until the RMP is updated, appropriate stipulations may be created and applied via the EA process. The Additional Resource Protection Alternative analyzes this option in the revised EA.</p>
David Currey	<p>Wetlands and floodplains should be better delineated. Objects to No Surface Occupancy "riders being attached" (i.e. proposed stipulations for updated RMP) to leases in the 2017 Battle Mountain Lease sale without the parcels being first properly surveyed on the ground for the appropriate concerns, i.e. wetland or floodplain delineation.</p>	<p>Wetlands, flood plains and playas were initially identified via ID Team field visits. Additional wetland acreage was derived from the wetlands GIS layer provided by USFWS. This process was used to identify all parcels and parts of parcels (to ¼ ¼ section) that are entirely or nearly-entirely covered by wetlands. These were recommended for deferral under the Partial Deferral Alternative in the preliminary EA, and under the Additional Resource Protection Alternative are proposed for lease sale with appropriate protective stipulations attached.</p>
Morris Pollock	<p>Parcel NV-17-06-106, Railroad Valley is proposed for deferral under</p>	<p>This parcel is proposed for lease sale under the Proposed Action, and under the</p>

	Partial Deferral Alternative, but was leased in the past and an oil well was drilled; other similar developments are nearby. Requests reconsideration of proposed deferral.	Additional Resource Protection Alternative with appropriate protective stipulations attached.
Email form letter		
Approximately 8000 identical or near-identical repetitions of email sent via WildEarth Guardians website, including several instances of repeated submissions by the same sender.	“I am shocked that you are poised to auction off hundreds of thousands of acres of our western public lands to the oil and gas industry for fracking.” Mentions June 2017 lease sale in Nevada along with lease sales in Montana, Utah and Wyoming; urges “reject the oil and gas industry's demands”; cites concerns about carbon pollution, water contamination, privatization of public lands, and threats to “treasured landscapes, including Zion National Park.”	BLM notes that a large number of people expressed, via this form letter, general opposition to oil and gas development at the expense of other public lands values. Regarding the Battle Mountain District, Nevada June 2017 Oil and Gas Lease Sale EA, no hydraulic fracturing or other drilling is proposed at this time; any proposed drilling would be subject to additional project-specific environmental analysis. Air quality, including carbon emissions, is addressed in EA sections 3.2.1 and 4.2.1. Water quality is addressed in sections 3.2.4 and 4.2.4. The Partial Deferral Alternative would apply new protective stipulations to parcels with wetlands and other surface waters. No national park lands are included in proposed Nevada lease sale parcels, and no other specially designated lands except the segment of Pony Express Trail which is also proposed for new protective stipulations.