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Draft

NASA Withdrawal Application Environmental Assessment Railroad Valley, Nevada

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Acronyms and Abbreviations

Acronym	Definition
BLM	Bureau of Land Management
CEQ	Council on Environmental Quality
CFR	<i>Code of Federal Regulations</i>
DLE	Direct Lithium Extraction
DoD	U.S. Department of Defense
DOI	U.S. Department of Interior
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FLPMA	Federal Land Policy and Management Act of 1976
FONSI	Finding of No Significant Impact
FR	<i>Federal Register</i>
GeoCarb	Geostationary Carbon Observatory
HUB	Historically Underutilized Business
JPL	Jet Propulsion Laboratory
JPSS	Joint Polar Satellite System
LWC	Lands with Wilderness Characteristics
MAIA	Multi-Angle Imager for Aerosols
MBTA	Migratory Bird Treaty Act
N/A	Not Applicable
NAAQS	National Ambient Air Quality Standards
NASA	National Aeronautics and Space Administration
NDWR	Nevada Division of Water Resources
NEPA	National Environmental Policy Act of 1969
NIST	National Institute of Standards and Technology
NOAA	National Oceanic and Atmospheric Administration
NPM	Net Proceeds of Minerals
NPS	National Park Service
NRCS	Natural Resources Conservation Service

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NV	Nevada
OCO	Orbiting Carbon Observatory
PILT	Payments-in-Lieu of Taxes
RMP	Resource Management Plan
ROW	Right-of-Way
RRV	Railroad Valley
SBA	Small Business Administration
Secretary	Secretary of the Interior
U.S.	United States
USC	<i>United States Code</i>
USCB	U.S. Census Bureau
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VER	Valid Existing Right
VRM	Visual Resources Management
WAA	Withdrawal Application Area

1. Purpose and Need for the Proposed Action

1.1 Introduction

The National Aeronautics and Space Administration (NASA) has applied to the Secretary of the Interior (Secretary) for the withdrawal and reservation, under Section (§) 204 of the Federal Land Policy and Management Act of 1976 (FLPMA), as amended (*United States Code* [USC] Title 43, § 1704) of approximately 22,684 acres of Bureau of Land Management (BLM)-managed public lands on a dry lakebed, or playa, at Railroad Valley (RRV), Nevada. NASA needs the surface integrity of this land preserved to conduct its Earth-observing satellite calibration activities. No other location in the United States is suitable for this purpose (refer to Section 1.2, *Purpose and Need for the Proposed Action*, for further explanation). NASA has requested that the land be withdrawn from all forms of appropriation or other disposition under the public land laws, including the mining, mineral leasing, and geothermal leasing laws, for 20 years, subject to valid existing rights (VERs) to preserve the integrity of the land surface in the withdrawal area for use in NASA's Earth-observing satellite calibration activities. NASA has prepared this Environmental Assessment (EA) to analyze the potential environmental effects of withdrawing and reserving the land for this purpose.

Federal land withdrawals under § 204 of FLPMA are formal lands actions (in this case, through a public land order issued by the Secretary of the Interior) that set aside, withhold, or reserve federal land from the operation of some or all of the public land laws, including mining laws. Withdrawals are established to eliminate or reduce resource conflicts and are most often used to preserve sensitive environmental values and major federal investments in facilities or other improvements to support national security and provide for public health and safety. Withdrawing the lands from the operation of some or all of the public land laws, including mining laws, ensures that the withdrawn lands will be used only for the purposes for which they were set aside; however, withdrawing lands is subject to VERs. In this instance, NASA has not requested transfer of the land to NASA's administrative jurisdiction; rather, the land would remain under the administrative jurisdiction of BLM, for management under FLPMA, and other applicable laws. Should the Secretary withdraw the land from the laws specified in NASA's application and reserve the land for NASA's satellite calibration purposes, BLM would need to consult with NASA to ensure that none of its management actions interfered with the purpose for which the land is withdrawn.

The withdrawal and reservation as requested by NASA is the Proposed Action for purposes of this analysis. As the applicant for the withdrawal and reservation, NASA is the lead federal agency for preparation of this EA. BLM within the Department of the Interior (DOI) is a cooperating agency^[1] with jurisdiction by law, as BLM manages the entire area requested for withdrawal and reservation (withdrawal application area [WAA]). This EA has been prepared in accordance with the National Environmental Policy Act of 1969 (NEPA), as amended (42 USC §§ 4321 et seq.); the Council on Environmental Quality (CEQ) regulations for Implementing the Procedural Provisions of NEPA (*Code of Federal Regulations* [CFR] Title 40, Parts 1500 through 1508) as revised in 2020^[2]; NASA's NEPA implementing regulations (14 CFR Subpart 1216.3) and policy; DOI NEPA implementing regulations (43 CFR Part 46) and BLM regulations for processing a requested or proposed withdrawal (43 CFR § 2310.3-2).

¹ 40 CFR § 1501.8 explains the role of a cooperating agency as follows: *Upon request of the lead agency, any Federal agency with jurisdiction by law shall be a cooperating agency. In addition, upon request of the lead agency, any other Federal agency with special expertise with respect to any environmental issue may be a cooperating agency. A State, Tribal, or local agency of similar qualifications may become a cooperating agency by agreement with the lead agency. An agency may request that the lead agency designate it a cooperating agency, and a Federal agency may appeal a denial of its request to the Council, in accordance with § 1501.7(e).*

² The authors of this document monitored CEQ proposals for revisions to the 2020 rulemaking, and accordingly have included an assessment of cumulative impacts and indirect effects in this document.

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The Earth Science Division in NASA's Science Mission Directorate funds, develops, and operates a fleet of Earth-observing satellites as well as instruments on the International Space Station designed to monitor and understand the Earth's systems and provide a record of long-term global observations. Researchers use data from these NASA satellites to better understand our planet's atmospheric motion and composition, including weather and climate patterns, land cover, land use and vegetation, ocean currents, temperatures, upper-ocean life, and ice on land and sea. These datasets, which cover even the most remote areas of the Earth, are freely and openly available to the public and are used in societal applications, including:

- Weather forecasting
- Climate prediction
- National security
- Disaster response and recovery
- Water resource monitoring
- Agriculture
- Food security
- Air quality monitoring
- Aviation safety

Because the Earth-observation data are used to provide essential information and tools for decision makers, the public, United States (U.S.) businesses, and scientists, the accuracy and precision of the data are critical (St. Germain, 2021).

NASA has relied on the RRV playa for post-launch satellite calibration for nearly three decades. Currently NASA relies on two narrow rights-of-way (ROWS), which support an access road and the placement of mobile sensors. While NASA's ground-based operations are minimal on the RRV playa, satellites using the RRV playa have long processed images of the undisturbed RRV playa to calibrate the on-board sensors. In recent years, the increased interest in mining and other potentially surface-disturbing public land uses on the playa threaten the surface integrity of the RRV playa and NASA's ability to calibrate its satellites from space.

NASA has been working with BLM since 2018 to determine the best way forward to preserve the RRV playa for continued satellite calibration use. NASA submitted an initial application of withdrawal in July 2019, followed by a revised application in December 2019, requesting the withdrawal of approximately 22,995.05^[3] acres of BLM-managed land. DOI reviewed and accepted the application and published a Notice of Application for Withdrawal in the *Federal Register* on April 29, 2021. Pursuant to the provisions and implementing regulations of § 204 of FLPMA, as amended (43 USC § 1714; 43 CFR § 2310.2), publication of the Notice of Application for Withdrawal segregates the land from all forms of appropriation or other disposition under the public land laws, including the mining, mineral leasing, and geothermal leasing laws, for up to 2 years, during which time NASA and BLM are responsible for preparing the required information, studies, analyses, and reports necessary for the Secretary of the Interior to decide on NASA's application (43 CFR § 2310.3-2). This EA is one of those required analyses.

³ The area requested was reduced to 22,684 acres in November 2021 after BLM suggested removal of a portion of land that overlapped with an existing Wildlife Management Area, which is in the northwestern portion of the withdrawal application area.

1.1.1 Satellite Calibration

Several federal agencies in addition to NASA, as well as commercial and international partners, depend on the RRV playa for satellite calibration. NASA's Jet Propulsion Laboratory (JPL) manages NASA's use of the RRV playa for satellite calibration and currently has a ROW issued by BLM under Title V of FLPMA for placement of its calibration instruments on the playa. Several high-profile satellite missions, including the following, use the RRV playa for calibration:

- **Landsat** is a series of NASA and U.S. Geological Survey (USGS)-developed and operated missions, including Landsat 7 (launched 1999), Landsat 8 (launched 2013), and Landsat 9 (launched 2021). The Landsat missions provide moderate-resolution, multi-spectral imagery of the land surface across the globe and extend a continuous and comprehensive record of land use and change beginning from 1972. NASA and USGS jointly manage the Landsat Program. For more information, visit <https://landsat.gsfc.nasa.gov/>.
- **Terra** is a NASA flagship mission that launched in December 1999. Terra has five satellite instruments that collect various types of global data on the state of the atmosphere, land, and oceans as well as their interactions with solar radiation and one another. Terra has contributed to improved forecasts of severe events, such as droughts and floods, and new methods of risk reduction for wildfires and volcanoes. For more information, visit <https://terra.nasa.gov/>.
- **Aqua** is another NASA flagship mission that launched in May 2002. The satellite has six different instruments on board that collect data on the Earth's water systems, which contribute to critical applications such as weather forecasting and better understanding of severe storms such as hurricanes and typhoons. For more information, visit <https://aqua.nasa.gov/>.
- **Orbiting Carbon Observatory (OCO)-2 and OCO-3** are NASA greenhouse gas-observing missions launched in 2014 and 2019, respectively. OCO-2 orbits as a standalone satellite in low-Earth orbit, while OCO-3 is mounted on the International Space Station. The OCO missions measure the geographic distribution of atmospheric carbon dioxide, an important greenhouse gas, for use in research. For more information, visit <https://ocov2.jpl.nasa.gov/>.
- **Joint Polar Satellite System (JPSS)**, including JPSS-1 and JPSS-2, is a series of National Oceanic and Atmospheric Administration (NOAA) polar-orbiting satellites that observe the Earth from space and collect and disseminate data on the Earth's weather, atmosphere, oceans, land, and near-space environment. JPSS monitors the entire planet and provides data that serves as the foundation of weather forecasts. JPSS is an interagency partnership between NOAA and NASA. For more information, visit <https://www.jpss.noaa.gov/>.

Additionally, the RRV playa is the primary calibration site for future missions, including the following missions in development:

- **Geostationary Carbon Observatory (GeoCarb)** is a NASA mission that will build on the OCO missions and observe key greenhouse gases, including carbon dioxide and methane, over the Americas. For more information, visit <https://eosps.nasa.gov/missions/geostationary-carbon-cycle-observatory-evm-2>.
- **Multi-Angle Imager for Aerosols (MAIA)** is a NASA mission that will take measurements needed to characterize the size, composition, and quantity of particulate matter in air pollution to understand connections between airborne particles and human health problems. For more information, visit <https://www.jpl.nasa.gov/missions/multi-angle-imager-for-aerosols-maia>.
- **JPSS-3 and JPSS-4** are a continuation of NOAA's JPSS series and have anticipated launch dates in 2028 and 2032, respectively. For more information, visit <https://www.jpss.noaa.gov/>.

Ground-based, also known as vicarious, satellite calibration refers to the process of using features on the Earth's surface to ensure that a satellite's instruments are operating correctly and within their required specifications. Prior to launch, a satellite's instruments are precisely calibrated in a laboratory. Once in operation, those calibrations degrade over time, and recalibration is necessary to maintain accurate measurements from the satellite. The standard method for calibrating a satellite's sensors is to compare measurements from the satellite to precise measurements of a specific feature on the Earth's surface. A well-characterized feature can provide an absolute calibration standard traceable to international standards, such as those issued by the U.S. Department of Commerce's National Institute of Standards and Technology (NIST). Currently, the RRV playa is the only site in the U.S. with all of the characteristics necessary to enable satellite calibration. Those characteristics are as follows (Teillet et al., 2007):

- Consistent color and texture across the entirety of the site's surface. For example, the site should lack vegetation and water features.
- Large enough to encompass the footprint of the satellite instruments to be calibrated.
- Flat surface to minimize surface shading from the Sun. For example, the site should not have hills, dunes, or other variations in the surface.
- Moderate reflectivity, meaning the surface must reflect enough light to be accurately measured, but not so much light that its brightness causes saturation of the satellite sensor detectors.
- Located in an arid region to maximize clear skies and minimize the probability of cloudy weather and precipitation.
- Low airborne particle concentration in the atmosphere, which typically occurs in places of high altitude, far from the ocean, and far from urban and industrial areas.
- Isolated from human activity yet consistently accessible for U.S.-based personnel performing onsite activities. Areas outside the U.S. are considered marginally accessible to inaccessible.
- High temporal stability in surface properties, such as color or texture, over a long period of time, with no changes year-to-year or season-to-season. For example, seasonal changes in foliage color are considered temporal instability.

Satellite calibration is performed by comparing precise ground-based and airborne measurements of the RRV playa features against space-based readings of the same area. As satellite instruments pass over the RRV playa, they measure light reflected from the playa surface. Because the RRV playa satisfies all of the conditions listed previously, scientists can compare the brightness measured by ground-based and airborne sensors to the brightness measured from space. Once any necessary corrections are made, the satellite instruments will continue to produce accurate and precise measurements. Refer to Appendix 1A, *Technical Requirements for Passive Earth Observing Satellite Instrument Calibration*, for additional details on satellite calibration requirements.

Mobile and nonpermanent instruments are placed within NASA's RRV playa ROWs to monitor the surface conditions at the playa. These instruments are used to monitor surface reflectance and other ambient meteorological conditions (for example, relative humidity, temperature, wind speed and direction, and density of airborne particulate matter), which are presumed to be representative of conditions across the entire playa. While these instruments help validate the suitability of existing conditions to support satellite calibration from space, the satellites image the surface of the playa and do not communicate directly with these instruments. The Proposed Action would allow for greater undisturbed distribution of the mobile instruments to better monitor specific meteorological conditions across the entire playa. The ground-based monitoring instruments include the following:

- Radiometers, which are sensors positioned at multiple locations on the surface of the RRV playa and on aircraft that view the ground and measure reflected sunlight (ground-based sensors are shown on Figure 1-1).
- Weather stations, which measure meteorological conditions such as wind speed and direction, air temperature and pressure, and relative humidity (Figure 1-2).
- Communications dish with associated solar-driven power supply (Figure 1-2).



Figure 1-1. Ground-based Radiometers in Use at RRV



Figure 1-2. Examples of Meteorological Instruments at RRV, Including a Weather Station, Solar Panels, and Communication Dish

1.1.2 Site Setting

The RRV playa is in Nye County, Nevada, approximately 80 miles northeast of the town of Tonopah. The RRV playa is part of the Tonopah Desert Basin and is approximately 80 miles long and up to 20 miles wide (Figure 1-3). The RRV playa is 4,708 feet (1,435 meters) altitude above sea level. The 22,684-acre WAA covers approximately 40 percent of the playa, which is approximately 55,600 acres in total area (15-by-15 kilometers) (USGS, 2021a).

In addition to NASA ROWs for satellite calibration activities, BLM manages the RRV playa for multiple uses, including other ROWs, livestock grazing, outdoor recreation, mineral exploration and production, and wildlife habitat management in accordance with BLM's Tonopah Resource Management Plan (BLM, 1997). The existing ROWs will not be affected by this Proposed Action; however, NASA may reassess whether the ROWs have continued utility if its application for land withdrawal is approved by the Secretary of the Interior.

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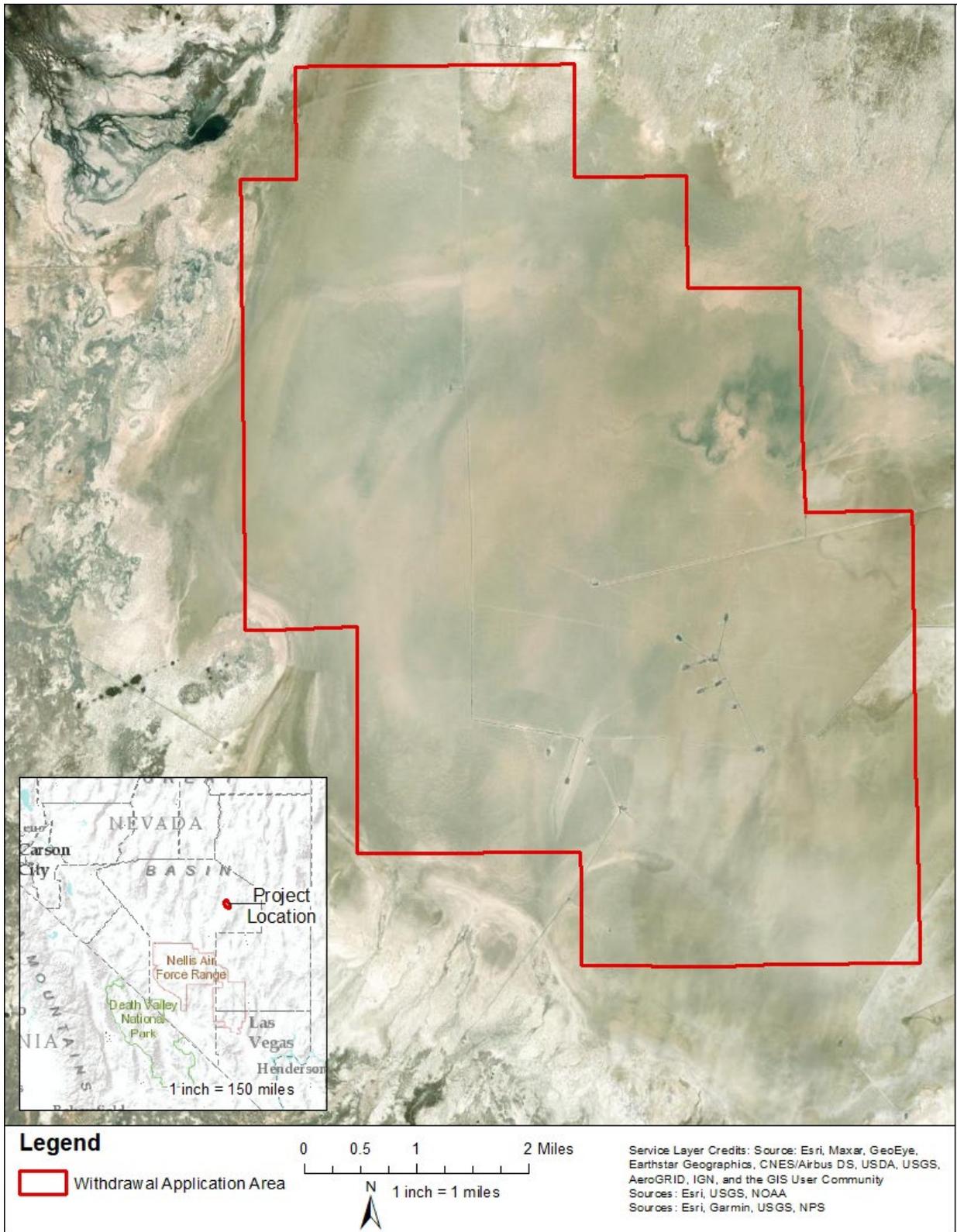


Figure 1-3. Location of WAA

1.2 Purpose and Need for the Proposed Action

Preservation of satellite calibration capability at a site located within the U.S. is of paramount national importance and serves multiple federal government and commercial interests. NASA has a congressionally mandated mission to monitor Earth from space. This requires the use of highly accurate satellites that need regular calibration. The most accurate, precise, and cost-effective calibration method is to use a specific and appropriate feature on Earth that can be easily accessed by researchers and meets certain well-defined criteria (refer to Section 1.1.1, *Satellite Calibration*, and Table 1-1). A U.S. satellite calibration site also supports the U.S. commercial satellite industry and directly benefits the citizens of the U.S. through a range of societal applications (refer to Section 1.1.1, *Satellite Calibration*, for further details on societal applications).

The purpose of the Proposed Action (a withdrawal and reservation of the public land as requested by NASA) is to protect and preserve a substantial portion of the RRV playa from incompatible land uses to ensure the continued availability of the site for satellite calibration. Any activity that would disrupt the integrity of the RRV playa's surface is considered an incompatible land use. NASA assessed the viability of other sites around the globe for its calibration needs and determined that the RRV playa is the only location that meets NASA's requirements (Teillet et al., 2007). As shown in Table 1-1, alternative sites were evaluated based on the criteria outlined in Section 1.1.1, *Satellite Calibration*, and compared to the RRV playa. The alternative sites were determined to be less desirable because of the effects of human activities, site inhomogeneity, topography, and excessive brightness, all of which negatively impact the accuracy of sensor readings for satellite calibration. Furthermore, a U.S. site is necessary given the accessibility challenges posed by international sites.

Table 1-1. Criteria Evaluation of Alternative Sites Considered Against the RRV Playa

Location	Spatial Homogeneous	Large Enough	Flat Enough	Suitable Reflectance	Clear Skies	Low Aerosol	Accessible	Temporal Stability
Railroad Valley, Nevada, USA	Sufficient	Sufficient	Sufficient	Sufficient	Sufficient	Sufficient	Sufficient	Sufficient
White Sands, New Mexico, USA	Sufficient	Sufficient	Poor	Poor	Sufficient	Sufficient	Sufficient	Sufficient
Salt Flats, Utah, USA	Sufficient	Sufficient	Sufficient	Poor	Sufficient	Sufficient	Sufficient	Poor
Ivanpah Playa, California, USA	Marginal	Marginal	Sufficient	Sufficient	Sufficient	Sufficient	Sufficient	Poor
Frenchman Flat, Nevada, USA	Sufficient	Poor	Sufficient	Sufficient	Sufficient	Sufficient	Sufficient	Sufficient
Lake Tuz, Turkey	Sufficient	Sufficient	Sufficient	Sufficient	Sufficient	Sufficient	N/A	Marginal
Shizafon, Israel	Sufficient	Sufficient	Sufficient	Sufficient	Sufficient	Sufficient	N/A	Sufficient
La Crau, France	Marginal	Sufficient	Marginal	Sufficient	Marginal	Sufficient	N/A	Marginal
Gobi Desert, China	Sufficient	Sufficient	Sufficient	Sufficient	Sufficient	Sufficient	N/A	Sufficient
Sahara Desert, Libya	Sufficient	Sufficient	Sufficient	Sufficient	Sufficient	Sufficient	N/A	Sufficient
Dome-C Antarctica	Sufficient	Sufficient	Sufficient	Poor	Sufficient	Sufficient	N/A	Sufficient

Source: Teillet et al., 2007.

N/A = Not applicable due to non-U.S. location

Other non-dry-lakebed calibration sites were eliminated from further analysis for the following reasons (Teillet et al., 2007):

- Snowfields were excluded because of their high surface reflectance and sensitivity to atmospheric fluctuations and variations in Sun angle reflectance.
- Vegetation targets were excluded because of seasonal variations in surface and directional reflectance.
- Water targets were excluded because of their low surface reflectance and sensitivity to atmospheric fluctuations and the effect of sun glint on water.
- Sites with existing alternative uses (that is, federal lands withdrawn for Department of Defense military operating area ranges) were also determined not to be suitable given the physical characteristics and nature and scope of activities related to military readiness training.

The need for the Proposed Action is to ensure that the U.S. Earth-observing satellite infrastructure functions as intended. As described in Section 1.1, *Introduction*, NASA along with other federal agencies, commercial, and international satellite operators use the RRV playa to calibrate satellites that provide critical data related to weather forecasting, climate prediction, national security, disaster response and recovery, water resource monitoring, agriculture and food security, air quality monitoring, and aviation safety. It is imperative that the nation's satellite infrastructure function as intended, which is only possible with regular and reliable calibration of the satellite sensors. The RRV playa's singular characteristics make it uniquely suitable to provide the required satellite calibration capability for NASA. Preservation of this capability within the U.S. serves a compelling national interest of maintaining the fully operational status of the multi-billion-dollar U.S. investment in Earth-observing satellite infrastructure. Permanent alteration of the surface of the RRV playa could destroy the necessary characteristics that make the RRV playa uniquely qualified to support NASA's Earth-observing satellite program.

1.3 Organization of the Environmental Assessment

NASA has prepared this EA to provide a comprehensive analysis of the potential environmental effects associated with the RRV land withdrawal. This EA is organized as follows:

- **Section 1, *Purpose and Need for the Proposed Action***, provides background information relevant to the Proposed Action, the purpose and need for the Proposed Action, and a brief description of how the document is organized.
- **Section 2, *Description of the Proposed Action and Alternatives***, presents detailed descriptions of the Proposed Action and Action/No Action Alternatives.
- **Section 3, *Affected Environment and Environmental Consequences***, provides a description of the existing conditions of the environmental resources potentially affected by the Proposed Action and Action/No Action Alternatives, and presents an analysis of potential direct, indirect, and cumulative impacts to environmental resources.
- **Section 4, *Consultation and Coordination***, provides a list of agencies and individuals who were contacted for information in the preparation of this document and to whom the EA will be distributed.
- **Section 5, *List of Preparers***, provides a list of the names and qualifications of the document preparers.
- **Section 6, *References***, lists the references used in preparing this EA.

1.4 Public Outreach and Involvement

As required by BLM regulations (43 CFR § 2310.3-1), a Notice of Application for Withdrawal was published in the *Federal Register* on April 29, 2021.⁴ The notice invited the public to comment on the withdrawal application and offered several methods for providing comments, including a virtual public meeting. The public comment period was open for 90 days and closed on July 28, 2021. The virtual public meeting in connection with the proposed withdrawal was held on July 19, 2021. NASA published instructions to access the virtual meeting in the *Reno Gazette-Journal* (Reno, Nevada), *Las Vegas Review-Journal* (Las Vegas, Nevada), *The Ely Times* (Ely, Nevada), and *Tonopah Times-Bonanza & Goldfield News* (Tonopah, Nevada). Responses to comments received during the land withdrawal public comment period are included in Appendix 1B; these comments and information provided by commenters has been considered in the development of this EA. A list of individuals that NASA worked with during the development of this EA is included in Section 4, *Consultation and Coordination*.

The Notice of Availability of the Draft EA will be advertised in the same newspapers as the Notice of Application for Withdrawal on June 25, 2022. Public comments will be accepted from June 25 through July 25, 2022. The Notice of Availability and Draft EA will be posted in the NASA NEPA Library on the public portal maintained by the NASA Environmental Management Division at NASA Headquarters (<https://www.nasa.gov/content/public-reviews>). Copies of the Draft EA will be available at BLM's Tonopah Field Office and the following library locations:

- Tonopah Public Library, 167 S. Central St., Tonopah, NV 89049
- White Pine County Library, 950 Campton St., Ely, NV 89301
- Lincoln County Library, 121 Joshua Tree Street, Alamo, NV 89001

⁴ Notice of Application for Withdrawal; and Notification of Public Meeting; Nye County, Nevada (86 Fed. Reg. 22703, Apr. 29, 2021).
<https://www.federalregister.gov/documents/2021/04/29/2021-08881/notice-of-application-for-withdrawal-and-notification-of-public-meeting-nye-county-nevada>

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2. Description of the Proposed Action and Alternatives

This section identifies and describes the Proposed Action, the No Action Alternative, and the Alternatives eliminated from further study. While NASA has requested that the Secretary of the Interior withdraw 22,684 acres and reserve them for NASA's use for satellite calibration, the Secretary may decide to withdraw all, some, or none of the land requested. The Proposed Action and No Action Alternative present the range from which the Secretary may select elements to implement.

2.1 Proposed Action

Under the Proposed Action, the Secretary of the Interior would withdraw approximately 22,684 acres of public lands as described in NASA's withdrawal application from all forms of appropriation or other disposition under the public land laws, including the mining, mineral leasing, and the geothermal leasing laws, subject to VER, and reserve them for NASA's satellite calibration activities on the RRV playa for a period of 20 years. These 22,684 acres are inclusive of the existing NASA and University of Arizona ROWs currently used by NASA on the RRV playa.

A withdrawal such as the Proposed Action would not incorporate any ground-disturbing activities; rather, it would preclude location and entry under U.S. mining laws and the issuance of new oil, gas, or geothermal leases. Withdrawals by the Secretary of the Interior under § 204 of FLPMA must recognize VERs; therefore, new exploration or mining operations might still occur on withdrawn lands where a VER has been confirmed. In addition, new well pads may be drilled or geothermal plants constructed on already-leased parcels, subject to relevant lease terms, and existing ROWs must be respected. While these activities may occur if the land withdrawal is established, they are not part of the NASA Proposed Action and, therefore, are not included in the assessment of the Proposed Action.

Under the land withdrawal, the RRV playa would remain under BLM's administrative jurisdiction, and BLM would continue to manage the land in accordance with the applicable BLM land use plan, in this case, the Tonopah Resource Management Plan (RMP) (BLM, 1997). As is now the case, future activities requiring a federal permit, approval, or authorization would be subject to a separate decision-making process by BLM and other agencies, as applicable; this decision process would include compliance with NEPA, FLPMA, and other applicable authorities. However, mining, mineral leasing, and the geothermal activities subject to public land laws, and which are not subject to VERs, could not be authorized on the WAA.

Should the Secretary of the Interior approve the withdrawal as requested, future proposed activities that are not covered under public land laws, that are consistent with the Tonopah RMP, and that do not interfere with the purposes of the withdrawal may be considered by BLM in consultation with NASA. Should the land be withdrawn and reserved for NASA's use, no permanent construction or alteration of the RRV playa surface would be permitted at the site, beyond activities subject to VERs. NASA would not install fencing if the land were withdrawn; instead, NASA could apply to BLM for authorization to install additional appropriate signage notifying the public and other potential public land users of any restrictions on access and the sensitive nature of the withdrawn land.

2.2 No Action Alternative

Under the No Action Alternative, the Secretary of the Interior would not withdraw and reserve the 22,684 acres in the RRV playa requested by NASA for satellite calibration purposes. Rather, the land would remain open for appropriation and disposition under the public land laws, including location and entry under the mining laws and leasing under the mineral and geothermal leasing laws. Any uses consistent with these

laws and with BLM's Tonopah RMP (BLM, 1997) could continue, following appropriate future BLM decision-making. Some allowable activities, especially those that could result in substantial surface disturbance, could render the site unusable for NASA's satellite calibration activities. The No Action Alternative does not meet the purpose and need for the Proposed Action; however, the No Action Alternative is analyzed in this document to baseline the effects of the Proposed Action.

Under the No Action Alternative, it is assumed that existing activities, such as recreation and current oil and gas mining activities, would continue on the RRV playa. While mining activities could increase on the RRV playa, any assumptions on future mining activities are not reasonably foreseeable because necessary approvals have yet to be obtained. Sufficient information is not publicly available to adequately understand the development or economic potential. This is partly due to the remoteness of the WAA, which is reflected by the general lack of transportation and utility infrastructure, and partly due to lack of reserve data, such as depth to deposits, concentrations of the mineral(s), presence of other valuable minerals, as well as undetermined/unproven extraction methods and other logistical challenges.

Full-scale lithium mining techniques in the U.S. include open pit mining and the use of evaporative ponding. Open pit mining can be used for lithium extraction; however, open pit mining may not be appropriate given the lithium is primarily located in subsurface brine. If deemed feasible, open pit mining involves the removal of the ground surface and the direct removal of the mineral. While open pit mines would have to be remediated after mining activities are complete, open pit mining may result in the removal of the cultural, geological, and biological resources naturally found at the site. Evaporative ponding involves pumping subsurface brine into evaporative open-air pools at the Earth's surface. Evaporative ponding is water intensive and typically requires approximately 500,000 gallons (1.5 acre-feet) of water per 1 ton of lithium produced (Bauer, 2020; Lithium Congress, 2020). Water resources are scarce in RRV and surrounding areas; therefore, acquiring water rights and/or supporting the long-distance water importation necessary for evaporative ponding would likely pose an insurmountable challenge. While novel direct lithium extraction (DLE) mining techniques that are less land and water intensive are being explored (NREL, 2021), these techniques are still in development and have not been demonstrated to scale in the U.S. to date. The viability of these under-development techniques at the RRV playa is unknown.

2.3 Alternatives Eliminated from Further Analysis

The following alternatives to the Proposed Action were considered and determined not to meet the purpose and need that prompted NASA's application for the Secretary of the Interior to withdraw and reserve public land for its satellite calibration activities. Therefore, these alternatives have been eliminated from further analysis.

2.3.1 Alternative Calibration Methods

NASA considered and assessed alternative Earth-observing satellite calibration methods, including on-board calibration systems and calibrations that use Sun or lunar observations. However, each of these methods presents significant technical challenges and drawbacks. On-board calibration systems degrade over time in orbit and do not provide a viable long-term calibration solution. Solar calibration systems degrade in orbit and are subject to variables such as the variance in solar output, which changes slightly over time. Similarly, lunar calibration systems are not suitable because the reflectivity of the Moon changes slightly as it orbits the Earth, which affects the accuracy of the calibration. In contrast, the ground-based calibration method proposed for the RRV playa allows for the continuous use of a geologically stable, meteorologically consistent, and topographically uniform reference point on Earth that can be

monitored. The space-based alternative calibration methods do not allow for comparable and reliable measurements with the same level of high precision and accuracy as does the RRV playa.

2.3.2 Alternative Site Locations

As explained in Section 1.2, *Purpose and Need for the Proposed Action*, NASA considered other sites for the satellite calibration activities conducted on the RRV playa and none of those alternative sites fulfill the essential criteria to meet the purpose and need of the Proposed Action.

2.3.3 Alternative Site Management (ROWs and Zoning)

The use of other legal arrangements for site management, such as additional ROWs, interagency agreements, regional zoning modifications, or cooperative agreements, would not adequately constrain potentially surface-disturbing land uses from occurring on the RRV playa. The existing satellite calibration ROWs support the access road and placement of the instruments used by NASA to collect data regarding the playa's ambient weather conditions; however, the ROWs, in and of themselves, are limited in scope and do not restrict activities that may occur outside the ROW boundaries.

Similarly, establishment of a ROW over the entire WAA would not remove the land from other forms of appropriation or other disposition under the public land laws, including mining, mineral leasing, and geothermal leasing laws. Therefore, it is possible that even with a ROW over the entire WAA, future surface-disturbing mining, oil/natural gas leasing, or geothermal production activities may occur. While it is possible that the nascent technologies for industrial-scale DLE from a subsurface brine may be proven viable, it is currently unknowable what DLE techniques may be proposed in the future for production of the lithium resource. Because a ROW over the entire WAA would not remove the area from appropriation or other disposition under the public land laws, this alternative does not provide adequate assurance that potentially surface-disturbing activities would not occur on the playa. Preservation of the playa's unique topographical character, inherent geological stability, and consistent ambient meteorological conditions is the purpose of NASA's withdrawal application. Any adverse impacts from surface-disturbing interference could render the playa unusable for NASA's purposes and would not meet the purpose and need for the Proposed Action. FLPMA 20-year withdrawals are reviewed prior to their termination date. Should mining techniques for lithium and other minerals reach the point at which non-interference with NASA's satellite calibration purposes can be guaranteed, a withdrawal may no longer be the appropriate legal instrument for protection of those purposes.

2.3.4 Withdrawal of Fewer Acres

The April 29, 2021, Notice of Application for Withdrawal indicated that NASA intended to select among the 22,995.05 acres of land identified in the withdrawal application and that it was "likely that if the Secretary [of the Interior] does elect to withdraw any of the lands requested, far fewer of the segregated lands would eventually be withdrawn." After publication of the Notice of Application, BLM recommended removal of a portion of the WAA that overlapped with the existing RRV Wildlife Management Area located in the northwestern portion of the WAA. NASA concurred with BLM's recommendation and reduced the size of its proposed land withdrawal from 22,995.05 acres to 22,684 acres. Following the public meeting and receipt of comments after publication of NASA's Notice of Application for Withdrawal, NASA further considered the technical and logistical requirements of its current and future satellite calibration activities. Given the design specifications of future Earth-observing satellite infrastructure and the expectation of future satellites with large, single-pixel footprints requiring a larger Earth surface-based calibration field, NASA determined that further reduction in the size of the WAA would not meet NASA's long-term requirements and the entire WAA is needed is to future proof this area for post-launch calibration of

satellites with large sensor imaging capacity. Refer to Appendix 1A, *Technical Requirements for Passive Earth Observing Satellite Instrument Calibration*, for additional detail on NASA's acreage requirements.

2.4 Resources Analyzed

In accordance with CEQ's directives, NASA has focused this EA on environmental resources that may be affected by the Proposed Action. The purpose of the EA is to provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement (EIS) or a finding of no significant impact (FONSI) (40 CFR § 1501.5). Environmental resources that are not present in the Proposed Action area or that would not be affected by the Proposed Action are not analyzed in this EA (refer to Subsection 2.4.2, *Resources Not Analyzed in Detail*). The EA should inform the public and decision makers on the relevant environmental impacts of a proposed action. In this case, and as further described in Section 3, *Affected Environment and Environmental Consequences*, NASA has concluded that preparation of an EIS is not required, and issuance of a FONSI is appropriate. For the purposes of this analysis, resources have been divided into two groups: (1) resources studied in detail because they display the differences between what might occur in the WAA under the Proposed Action, as distinct from under the No Action Alternative, and (2) resources eliminated from further analysis.

2.4.1 Resources Studied in Detail

This EA evaluates the potential impacts to the following environmental resources in Section 3, *Affected Environment and Environmental Consequences*:

- Biological Resources, including Vegetation, Wildlife, Special Status Species, Migratory Birds, Wild Horses and Burros
- Geology, Soils, and Mineral Resources, Except Oil, Gas and Geothermal Resources
- Water Resources, including Groundwater and Surface Water
- Socioeconomics, including Environmental Justice
- Land Use, including Recreation, Livestock Grazing, and Visual Resources

2.4.2 Resources Not Analyzed in Detail

NASA's proposed withdrawal does not include any surface-disturbing activities, construction of roads or permanent infrastructure, or emissions from the combustion of fossil fuels. Therefore, the Proposed Action would result in preservation of the playa's current natural condition and would not result in any adverse impacts to commonly analyzed resources, as described in this subsection.

The rationale for the elimination of these resources is summarized as follows:

- **Utilities and Infrastructure:** No changes to existing utilities, building infrastructure, or energy supply would result. Because the satellite calibration purpose for which NASA is requesting the withdrawal requires the surface of the WAA to remain undisturbed, it is not likely that BLM would permit construction of additional infrastructure, as such an activity would not be consistent with the purpose of the land withdrawal.
- **Noise:** No additional noise would be generated as a part of the Proposed Action; therefore, there would be no adverse effects on either human or wildlife populations from noise exposure.
- **Traffic and Transportation:** The Proposed Action would have no adverse impact on current or future traffic conditions or transportation infrastructure in the affected area. The Proposed Action would

require only short-term, temporary use of a limited number of vehicles using existing roads, and no changes to transportation infrastructure would be necessary as part of the Proposed Action. Existing trails on the RRV playa would remain in place.

- **Air Quality:** The Clean Air Act of 1970 requires the U.S. Environmental Protection Agency (EPA) to identify National Ambient Air Quality Standards (NAAQS) necessary to protect the public health and welfare. NASA's proposed land withdrawal does not include any surface-disturbing activities or new sources of air emissions, either mobile or stationary; therefore, the Proposed Action would have no adverse effect on regional air quality emissions. The research efforts supported by the calibration conducted on the RRV playa would improve the understanding of the causes and effects of air pollution.
- **Greenhouse Gases and Climate Change:** NASA's proposed land withdrawal does not include any surface-disturbing activities or new sources of greenhouse gas emissions, either mobile or stationary; therefore, the Proposed Action would not increase greenhouse gas emissions and would have no effect on climate change. The research efforts supported by the calibration conducted on the RRV playa would improve the public's and scientific community's understanding of the causes and effects of greenhouse gas emissions and climate change.
- **Human Health and Safety:** Human health and safety include public safety and occupational safety. Occupational health is the promotion and maintenance of the physical, mental, and social well-being of workers by controlling risk to the highest degree by protecting the safety, health, and welfare of people engaged in work or employment. NASA's proposed land withdrawal does not include any activities that may adversely affect existing occupational health and safety protocols at the site. Therefore, the Proposed Action would not affect public or occupational safety.
- **Protection of Children:** Executive Order 13045, "Protection of Children from Environmental Health Risks and Safety Risks," requires federal agencies to address disproportionate risks to children. The RRV playa is in a remote area where children are generally not present. The activities associated with the Proposed Action would result in no foreseeable impact to children.
- **Hazardous Materials and Solid Waste:** Hazardous substance is defined in the Comprehensive Environmental Response, Compensation, and Liability Act as substances that, because of their quantity, concentration, or characteristics, may present substantial danger to public health or the environment. While NASA's existing activities on the RRV playa involve substances associated with motor vehicles and field work, such as petroleum and batteries, the use of these materials would not be affected by the withdrawal and would be in keeping with current activities on the site. All batteries and electronic equipment left at the site will be monitored and maintained regularly. Furthermore, no waste of any kind would be left at the site. Consequently, there would be no effect from hazardous materials and solid waste.
- **Wilderness:** Wilderness areas include Wilderness Study Areas, Wilderness Characteristics Inventory, and Lands with Wilderness Characteristics (LWC). The WAA is within LWC unit NV-060-186; however, the unit does not possess wilderness characteristics. No other wilderness areas are within the WAA.
- **Areas of Critical Environmental Concern:** FLPMA defines areas of critical environmental concern as areas within the public lands where special management attention is required. There are no areas of critical environmental concern within the WAA.
- **Paleontological Resources:** During the planning phases for the project, BLM experts determined that the potential for paleontological resources in the WAA is low, and no further research is necessary. NASA's proposed land withdrawal does not include any surface-disturbing activity and would not affect paleontological resources.

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- **Cultural Resources:** The Proposed Action does not involve any surface or subsurface disturbance; therefore, there is no potential for impacts to cultural resources. NASA has determined that the Proposed Action is not the type of activity that has the potential to cause effects on historic properties; therefore, in accordance with 36 CFR § 800.3(1), no consultation under the National Historic Preservation Act was required.
- **Native American Tribal Resources:** Under federal law, a federal agency is required to ensure that tribal resources are considered in all its major activities. The relevant laws pertaining to cultural resources include the Native American Graves Protection and Repatriation Act and the American Indian Religious Freedom Act of 1978 as well as Executive Order 13007, "Indian Sacred Sites," and Executive Order 13175, "Consultation and Coordination with Indian Tribal Governments." BLM identified three tribes affiliated with the RRV playa, including the Duckwater Shoshone Tribe, Ely Shoshone Tribe, and Shoshone-Paiute Tribes Duck Valley Indian Reservation. The Proposed Action does not involve any surface or subsurface disturbance; therefore, there is no potential for impacts to tribal resources. BLM contacted Native American tribes with a cultural affiliation in the area requested for withdrawal (Appendix 3A) and received no responses.
- **Oil, Gas and Geothermal Resources:** Several leases for oil and gas resources and one producing oil well are located within the RRV playa. Oil and gas activities have occurred in RRV since the discovery of oil in the deep valley rocks in 1954 and more than 80 percent of all oil and gas production in Nevada comes from RRV. As described in NASA's *Mineral Potential Report* (NASA, 2022), while the projected development potential of oil and gas resources in the WAA is moderate to high and oil resources are clearly present, the complicated geology makes it difficult to identify suitable drilling targets. The potential for oil shale/natural gas at depth on the eastern side of RRV is also moderate to high. A projected surge in domestic natural gas production could make the Chainman Formation a potential target in RRV, though not necessarily beneath the WAA. The cost of deep exploration and current limitations in infrastructure needed to transport the gas to market could be detrimental to this effort. Further, the state of Nevada produces a small proportion of domestic oil, and there is no shortage of other oil deposits that are similarly productive and located closer to existing infrastructure. It is reasonable to conclude that these alternative sites may be more likely targets for oil and natural gas exploration and production activities than the WAA. Given these factors, and the unlikelihood of a trend toward a high demand for oil and gas leasing and development in such a remote area, even under the No Action Alternative, NASA concluded potential effects on oil, gas, and geothermal resources could be eliminated from detailed analysis.

3. Affected Environment and Environmental Consequences

This section provides a description of the affected environment for each of the potentially impacted resources, along with an analysis of the potential environmental consequences associated with the Proposed Action.

Affected Environment

The following Affected Environment sections provide an overview of the existing conditions within the Proposed Action area. In compliance with NEPA, the description of the affected environment focuses on those resources and conditions potentially impacted by the Proposed Action and No Action Alternative.

This section is organized by resource type and includes a description of the existing environment, including trends and planned actions and the region of influence for each resource. The region of influence is defined as the area in which withdrawal-related environmental impacts could occur. For most resources, the region of influence is limited to the WAA as shown on Figure 1-3. However, for some resources, the potential effects of a withdrawal and reservation of land for satellite calibration purposes must be considered within the context of the surrounding vicinity. For example, the evaluation of possible socioeconomic effects of a withdrawal also includes all of Nye County.

Environmental Consequences

The purpose of NEPA is to inform decision makers and the public of the likely environmental consequences of the Proposed Action and its Alternatives.

Consistent with the requirement to compare the impacts to the environment that might occur under the respective Alternatives, this section identifies the anticipated effects of the Proposed Action on each resource as distinct from environmental trends and planned actions that could continue under the No Action Alternative, absent the requested withdrawal. The analysis of resource impacts focuses on environmental issues in proportion to the degree of impact within the region of influence. Impacts described in this EA are evaluated in terms of type (beneficial or adverse), context (local or regional), intensity (none, negligible, minor, moderate, or significant), and duration (short-term and long-term). These terms are further defined in Table 3-1.

Table 3-1. Impact Threshold Definitions

Impact Intensity	Intensity Description
Negligible	An environmental effect that is so small, it would be difficult to observe, and its effect on human health, cultural resources, or the environment would be considered inconsequential.
Minor	An environmental effect that is observable, yet it is unlikely to appreciably affect human health, cultural resources, or the environment.
Moderate	An environmental effect that is observable and may appreciably affect human health, cultural resources, or the environment, yet it is below regulatory, industry, and commonly accepted thresholds for significance.
Significant	An environmental effect that is observable and could cause a major and lasting impact to human health, cultural resources, or the environment. If significant impacts are identified that cannot be mitigated, an EIS would normally need to be completed prior to implementing the Proposed Action.
Duration:	Short-term – The effects of the impact disappear over time. Long-term – The effects of the impact will remain in the environment indefinitely.

NASA's requested land withdrawal would limit, if not eliminate, future surface-disturbing activities on the RRV playa; therefore, mitigation measures for direct or indirect effects of the Proposed Action are unnecessary. However, as NASA would be continuing the satellite calibration activities it already conducts on lands within the WAA under its existing ROWs, and as noted where relevant to the discussion, NASA would continue to implement mitigation measures or best management practices related to mitigating any impacts from the instruments it uses.

3.1 Biological Resources

This section describes the biological resources for the Proposed Action, including vegetation, noxious weeds, invasive non-native species, wildlife, special status species, and migratory birds. The region of interest includes the WAA.

3.1.1 Affected Environment

3.1.1.1 Vegetation

The WAA is located within the Basin and Range landscape, which comprises broad valleys and mountain ranges. The WAA is entirely within a playa, which is unvegetated throughout the entire year (BLM, 1994, 2011). Additionally, the dry lakebed does not contain noxious weeds or invasive non-native plants.

3.1.1.2 Wildlife

The Great Basin and Range region hosts a wide variety of animal species, which include a wide range of mammals, birds, lizards, snakes, and reptiles. Wild horses and burros are present in this region. The RRV Wildlife Management Area, which is jointly managed by BLM and the Nevada Department of Wildlife, is adjacent to the WAA. This area is host to migratory and nesting waterfowl, non-game birds, mammals, and fish (BLM, 1990, 2011).

Although wildlife exists in the region, wildlife activity on the RRV playa is minimal, primarily because of the lack of water and vegetation on the dry lakebed, though portions of the dry lakebed may be subject to seasonal flooding and ponding. Flooded areas could serve as a draw to wildlife.

3.1.1.3 Special Status Species

Special status species include species protected by federal law, species that are listed by the State of Nevada, and species designated by BLM. During a database review, information regarding special status species was found in the Nevada Department of Wildlife, the Nevada Department of Natural Heritage, and the U.S. Fish and Wildlife Service (USFWS) databases. A total of 20 special status species were identified as potentially occurring in the study area. These species are presented in Appendix 3B. Potential occurrence within the study area was evaluated for each species based on their habitat requirements and known distribution. The dry lakebed is unvegetated and does not provide adequate forage or cover for wildlife to reside in the area; only occasional pass throughs by birds can be expected. Based on the habitat requirements and known distribution analysis, there is limited potential for sensitive species to occur within the dry lakebed. Additional consideration for species protected by the Endangered Species Act (ESA) and the Migratory Bird Treaty Act (MBTA) is provided in the discussion that follows.

Endangered Species Act

Federally listed threatened and endangered species are protected plants and wildlife that are in danger of becoming extinct within the foreseeable future throughout all or a significant portion of the species' range. The ESA requires federal agencies to ensure that their actions do not jeopardize the continued existence of any federally listed endangered or threatened species or adversely modify any critical habit of such species. As shown in Table 3-2, only four federally listed species are documented to occur in the WAA.

A review of the habitat requirements and known distribution of the identified species was conducted to determine the potential for the species to occur on the dry lakebed. The Southwestern Willow Flycatcher (*Empidonax traillii extimus*) is known to occur in riparian habitats with dense vegetation. The Yellow-billed Cuckoo (*Coccyzus americanus*) requires wooded habitat with dense cover and nearby water, including woodlands with low, scrubby, vegetation; overgrown orchards; abandoned farmland; and dense thickets along streams and marshes. The Railroad Valley springfish (*Crenichthys nevadae*) occurs in thermal springs, including in Locke's Wildlife Management Area and Duckwater Shoshone Reservation. The Monarch Butterfly (*Danaus plexippus*) migration sites require flowering vegetation and water sources. Based on the habitat requirements and known distribution analysis, there is limited potential for these species to occur within the dry lakebed. Additionally, no critical habitats are designated for any species within the region of influence.

Table 3-2. Federally Threatened and Endangered Species Documented to Occur in WAA

Species Type	Common Name	Scientific Name	Federal Status
Bird	Southwestern Willow Flycatcher	<i>Empidonax traillii extimus</i>	Endangered
Bird	Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	Threatened
Fish	Railroad Valley Springfish	<i>Crenichthys nevadae</i>	Threatened
Insect	Monarch Butterfly	<i>Danaus plexippus</i>	Candidate

Source: USFWS, 2022a.

Migratory Birds

The MBTA establishes federal responsibilities to protect migratory birds. Under the MBTA, nearly all species of birds occurring in the U.S. are protected. Although a wide variety of bird species protected under the MBTA are known to occur in the surrounding area, including raptors, songbirds, shorebirds, and perching birds, no migratory birds regularly occur within the playa (USFWS, 2022a). The playa is not vegetated and, therefore, does not provide adequate forage or cover for birds to reside. Only occasional pass throughs by birds can be expected. Birds have occasionally been observed perching on signposts and other artificial features on the playa.

3.1.2 Environmental Consequences

3.1.2.1 Proposed Action

Under the Proposed Action, the Secretary of the Interior would withdraw and reserve 22,684 acres of BLM-managed lands to preserve the lands for NASA's satellite calibration activities. A withdrawal such as that requested by NASA would not incorporate any surface-disturbing activities; therefore, the withdrawal itself would not result in adverse impacts to biological resources, including sensitive species and their habitats. Additionally, because of the lack of vegetation or consistent water supply, it is highly unlikely that wildlife species would frequent the WAA. However, on the remote chance that a protected species uses the

satellite calibration equipment, consistent with the terms of its ROWs, NASA employees and their partners would continue to leave the species unharmed and not harass any wildlife. Similarly, NASA would continue to coordinate with BLM regarding the removal of any noxious weeds or invasive non-native plants that could harm NASA's calibration equipment. As a result of the lack of vegetation or wildlife inhabiting the site and given the mitigations in place, negligible adverse effects on biological resources would occur from the Proposed Action. Indeed, biological resources, in particular sensitive species and their habitat, may see a reduction in impacts compared to the No Action Alternative.

3.1.2.2 No Action Alternative

Under the No Action Alternative, the lands would not be withdrawn, and current activities would continue. The limited biological resources that may be present on the playa could be affected by any surface disturbance that may occur under the No Action Alternative. In particular, special status species that are not protected under a federal statute such as the ESA, MBTA, or Bald and Golden Eagle Protection Act are not protected from adverse impacts from exploration or mining under U.S. mining laws.

3.2 Geology, Soils, and Mineral Resources

This section describes the topography, physiography, geology, soils, and mineral resources for the Proposed Action. The region of interest for this resource is the WAA.

3.2.1 Affected Environment

3.2.1.1 Topography and Physiography

The RRV playa is flat with a relatively consistent elevation of approximately 4,707 feet above mean sea level (USGS, 2021b, 2021c, 2021d, 2021e). It is located in the Great Basin physiographic section, which is a part of the northern portion of the Basin and Range tectonic province (NPS, 2020). This physiographic section is characterized by north-south trending mountain ranges and wide valleys often hosting playas (alkali flats). The Great Basin is a large hydrographic basin with no outlet to any ocean, and all water in the province either evaporates, infiltrates, or flows to generally saline lakes.

3.2.1.2 Geology

Like the rest of the Great Basin physiographic section, northern Nye County, Nevada, is characterized by north-trending bedrock ranges separated by alluvial valleys. The distinct geology and physiography of the area is the result of tectonic activities over the past 15 million years that have stretched Nevada in an east-west direction to about twice its original width (Bradley et al., 2017). Older rocks in the bedrock ranges typically flank the valleys to the east and west. The extension has resulted in down-faulted blocks (grabens) in the valleys that have continued to subside over time, accumulating thick sequences of valley-fill deposits, consisting of a thick sequence of sediments derived from the bedrock ranges interlayered with numerous volcanic rocks (Kleinhampl and Ziony, 1985). In the RRV playa, valley-fill deposits are as much as 9,500 feet thick on the east side of the graben that forms the RRV playa and as little as 700 feet in places on the west side of the RRV playa (Lyons, 2018). Like many other playas in Nevada, RRV hosts several geothermal springs and a subsurface brine complex.

3.2.1.3 Soils

The RRV playa consists of two soil units, including playa and Nuyobe-Blueagle-Playas complex. The vast majority of the WAA consists of the playa soil unit, which is a relatively flat, silty clay soil. Less than

1 percent of the WAA consists of the Nuyobe-Blueagle-Playas complex unit, which is a silty loam with alluvial fans and dunes. Both soil units are poorly drained, have high areas of runoff, and have low water erodibility; however, they are rarely exposed to flooding (NRCS, 2022).

3.2.1.4 Mineral Resources

The State of Nevada is rich in both fuel and non-fuel mineral resources. Both types occur in the WAA. Geological similarities between RRV and the lithium-producing mines in Clayton Valley, Nevada, which is approximately 110 miles to the west-southwest, have spurred recent interest in lithium-containing brines, along with other minerals in RRV. Almost 620 unpatented mining claims, each approximately 20 acres in size, were located on the RRV playa in 2017. Since around 2018, several companies have been accumulating existing geological data from oil, gas, and other resource exploration activities to investigate the potential for lithium and other mineral deposits to occur in RRV. Publicly available data suggest that lithium is present in brine solutions within the RRV playa and could be extracted if economically feasible methods are identified. The possibility of potentially exploitable elements and minerals in the subsurface brines has been suggested but verifiable information has not been made publicly available.

3.2.2 Environmental Consequences

NASA has prepared a *Mineral Potential Report* (NASA, 2022), which has concluded that there is a high likelihood of dissolved lithium and other minerals in subsurface brine in the area requested for withdrawal. Given the significant environmental and regulatory concerns with the current techniques employed for lithium extraction and the nascent state of extraction techniques that might raise fewer concerns, NASA determined that it would be speculative to prepare a reasonably foreseeable development scenario for lithium development in connection with this analysis.

For the purposes of this analysis and to display the difference in environmental impact between the Proposed Action and No Action Alternatives, NASA has assumed that there will be no exploration projects or mining projects during the period of withdrawal of these lands. NASA is assuming that there will be no exploration projects based on the principle that no new rights under the mining laws may be created after a withdrawal; thus, operators would not be expected to pursue exploration projects, which are generally undertaken for the purpose of establishing a valid property right under the mining laws. NASA is also assuming for the purposes of this analysis that no operators would submit proposals for new mining projects under the Proposed Action. In making these assumptions, NASA is not determining, or speculating on, whether any of the mining claims located on the WAA constitute VERs but showing the difference in effects to mineral resources on the playa under a withdrawal and absent a withdrawal.

This analysis methodology is being used only for the evaluation of the environmental consequences of the withdrawal and reservation requested from the Secretary of the Interior by NASA. Specific details and effects of approving any future proposed plans of operations are beyond the scope of this analysis of the requested withdrawal and will not be analyzed within this EA. Should mining operations be proposed in the future, BLM would conduct appropriate site-specific environmental and other reviews, including, as necessary, the consideration of alternatives, project design criteria, and mitigation measures.

3.2.2.1 Proposed Action

The Proposed Action would result in no direct or indirect effects on topography, geology, soil, or mineral resources because the effect of the withdrawal would be to leave the surface and subsurface of the RRV playa undisturbed, thereby preserving it for NASA's satellite calibration requirements. In the *Mineral Potential Report* (NASA, 2022), NASA found a high likelihood of dissolved lithium and other minerals in

subsurface brine in the WAA. However, it would be unreasonably speculative to hypothesize on if and how future mining could occur within the WAA absent the withdrawal, given the non-utility of proven lithium hard rock mining techniques (for example, open pit mining) to extract and produce lithium from a brine based lithium resource; the high intensity water use required to produce lithium from surface-located evaporative ponds; and the nascent state of extraction and production processes that may, at some time in the future, be available for DLE and which may avoid significant surface-disturbing activities or high intensity water use (refer to Section 2.2, *No Action Alternative*, for further explanation). The socioeconomic effects associated with potential limitations on mineral extraction and the availability of minerals are discussed in Section 3.4, *Socioeconomics*.

3.2.2.2 No Action Alternative

New activities within the WAA, including mining operations, may occur under the No Action Alternative. Depending on the nature of these activities (for example, recreational activities versus open pit mining), an adverse effect on the existing topography, geology, and soils within the WAA could result. While the potential intensity and duration of these events are unclear at this time, there has been recent interest in lithium mining in the RRV playa, which could result in increased availability of the mineral in the region, nationally, and internationally. However, the significant environmental and regulatory approval requirements associated with current techniques employed for mineral extraction, and the nascent state of extraction and production processes that may be available in the future for direct lithium or other mineral extraction and avoid significant surface-disturbing activities or high intensity water use could affect the technical and economic viability of mineral mining on the RRV playa (refer to Section 2.2, *No Action Alternative*, for further explanation). Assuming the technical and regulatory challenges could be overcome for mineral extraction, there would be a benefit from mineral availability under the No Action Alternative, but until such time as those mineral extraction methods are proven to scale, further analysis of their potential environmental impact would be speculative and not informative to the public or decision makers.

3.3 Water Resources

This section describes water resources for the Proposed Action, including surface water and groundwater. The region of interest for this resource is the hydrographic subbasins within the WAA.

3.3.1 Affected Environment

3.3.1.1 Surface Water

The WAA is located entirely on the RRV playa within Hydrographic Region 16 Great Basin (NDWR, 2022). The Great Basin is the largest area of contiguous watersheds with no outlets in North America. The ground is dry most of the time; however, during rainfall events, surface water collects in the playa and either is released to the atmosphere as evapotranspiration or seeps into the underlying aquifers. There are also small areas of springs and wetlands surrounding the playa outside the region of influence (USFWS, 2022b).

The average annual precipitation varies across the region from 5.24 inches in Tonopah to 9.76 inches in Ely (U.S. Climate Data, 2022a, 2022b). The RRV playa is located within the area designated as Federal Emergency Management Agency (FEMA) Zone A flood hazard, which equates to a once in a 100-year, 24-hour runoff event (USFWS, 2022b).

3.3.1.2 Groundwater

The WAA is located within the Basin 173B RRV/Northern Part hydrographic basin managed by the Nevada Division of Water Resources (NDWR). The basin covers an area of 2,149 square miles. The perennial yield is 75,000 acre-feet per year, which is the maximum amount of groundwater withdrawn long term without depleting the reservoir. The groundwater appropriations are 31,852 acre-feet per year, which is the amount of water permitted to be used (NDWR, 2022). The water in this basin is not currently overallocated. Most of the groundwater in the basin is used for irrigation (NDWR, 2022).

3.3.2 Environmental Consequences

3.3.2.1 Proposed Action

Under the Proposed Action, the Secretary of the Interior would withdraw and reserve 22,684 acres of BLM-managed lands to preserve the lands for NASA's satellite calibration activities. The Proposed Action would limit surface disturbance to the playa and would not impact water resources. NASA's Proposed Action would require no regional surface water or groundwater and would have no effect on existing water rights. Therefore, there would be no effects on water resources from the Proposed Action.

3.3.2.2 No Action Alternative

Under the No Action Alternative, the lands would not be withdrawn, and current activities would continue. No new effects on water resources would be expected under existing conditions; however, the No Action Alternative could result in increased mining activities in the future. Increased mining activities could result in the collection of water resources, though the potential intensity and duration of these events are unclear at this time.

3.4 Socioeconomics

This section describes the socioeconomic resources for the Proposed Action, including population, economy, employment, and environmental justice. The region of influence for this resource is Nye County, Nevada.

3.4.1 Affected Environment

3.4.1.1 Population

The WAA is in Nye County, Nevada, with the closest community located in Tonopah, Nevada. The area is sparsely populated because the surrounding area is entirely federally managed public lands and primarily undeveloped desert. In 2020, the population of Tonopah was 2,290 (USCB, 2020), which is an 8 percent decrease from the population in 2010.

3.4.1.2 Regional Economy and Employment

For a large part of Nye County's history, the local economy was focused on mining and government sectors, either direct employment or contracted professional and business services. Other primary industrial sectors have included agriculture and leisure and hospitality. More recently, trade, transportation, utilities, education, and health services have grown in their share of the County's economy (Board of Nye County Commissioners, 2012). More than 1,000 people are directly employed by Nye

County's mining industry and earn some of the highest annual salaries in the county, averaging \$116,037 (Nevada Governor's Office of Economic Development, 2021).

Nye County's land area consists of approximately 18,182 square miles (11,636,429 acres), of which approximately 98 percent is federally managed or state-owned (Nye County, 2021). Nye County receives Payments-in-Lieu of Taxes (PILT), which are federal payments to local governments to help offset losses in property taxes due to the existence of nontaxable federal lands within their boundaries. In 2020, Nye County received \$3,501,796 in PILT compensation for 8,547,306 acres of federal land. Of this, approximately 6,469,673 acres are managed by BLM. Other federal agencies that provide PILT to Nye County include the U.S. Department of Agriculture Forest Service, National Park Service, and USFWS (DOI, 2021). Nye County also receives Net Proceeds of Minerals (NPM) and royalties from mining operations. The taxes are based on the production of minerals from all operating mines, oil and gas wells, and geothermal operations within the County. In 2020, Nye County received \$7,220,152 in payments from NPM and royalties from 195 active operations (Nevada Department of Taxation, 2021).

3.4.1.3 National Economy and Employment

NASA's Earth-observing satellite program serves a variety of purposes, principal among them is to further Earth-related scientific research. Given the diffuse nature of the public good provided by Earth observations, it is difficult to identify the full economic value to the market. Sectors most influenced by the use of Earth observation data, include the following:

- Mining and mineral exploration
- Software/satellite information processing
- Energy/oil
- Engineering and construction
- Agriculture
- Aeronautics and aviation
- Land use planning
- Natural resource management
- Environmental and weather monitoring

Earth observations by satellites benefit multiple sectors of the U.S. economy and American well-being, health, education, and security, providing an estimated value of over \$4.9⁵ billion annually (NASA, 2016). An analysis of the six industries that take the most advantage of Earth-observation data determined that approximately 2.3 million jobs are affected. This estimate serves as a lower bound as other industries are also certainly affected (NASA, 2016). The geospatial industry, which is a critical national asset that also uses the RRV playa to calibrate satellites, was estimated to be a \$73 billion annual industry 5 years ago (FGDC, 2016). Furthermore, the geospatial services sector, which is built upon Earth observations and involves generating, processing, and using Earth observations, employs approximately 4 million people globally and delivers benefits of over \$550 billion annually (National Science and Technology Council, 2019). NASA is aware that commercial satellite operators also use data from RRV for post-launch calibration of sensors; however, publicly available information is not accessible at this time to specifically analyze the overall benefit to the commercial satellite industry.

Following BLM's public meeting in July 2021, BLM received comments from commercial geospatial service providers expressing support for NASA's requested withdrawal because of their direct reliance on the satellite calibration conducted on the RRV playa, including responses from companies with global footprints and products that rely on the ability to use the RRV playa for absolute radiometric calibration

⁵ The values in this paragraph have not been adjusted for inflation.

and validation of their Earth-observing satellites. These companies provide imagery to customers across many commercial and government sectors, including agriculture, energy and land management, emergency management, infrastructure, insurance, finance, security, scientific research, and education. The loss of the RRV playa would significantly impact commercial calibration programs by degrading their ability to provide accurate radiometry. Full details of these statements submitted on the record can be found in Appendix 1B.

3.4.1.4 Environmental Justice

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority and Low-income Populations," requires federal agencies to consider disproportionate risk to minority and low-income communities. The CEQ guidelines suggest that areas with a high concentration of minority and/or low-income populations may be present in areas where the minority and/or income population exceeds 50 percent or where the percentage of area for minority and/or low-income populations is meaningfully greater than the minority and/or low-income population percentage of the general population.

According to the EPA's EJScreen tool, the minority population in the study area is approximately 24 percent, which is lower than the State (51 percent), EPA Region 9 (Pacific Southwest) (60 percent), and the U.S. (40 percent). The low-income population in the study area is 39 percent, which is higher than the State (32 percent), region (31 percent), and the U.S. (31 percent). The unemployment rate of Nye County is 9 percent, which is higher than the State (6 percent), region (6 percent), and the U.S. (5 percent). Based on the EJScreen results, low-income populations in Nye County are higher than in the State, region, or country (EPA, 2022). This is additionally supported by the fact that the U.S. Small Business Administration (SBA) identifies Nye County as a Historically Underutilized Business (HUB) Zone, qualified by income and unemployment (SBA, 2022).

3.4.2 Environmental Consequences

3.4.2.1 Proposed Action

Under the Proposed Action, the Secretary of the Interior would withdraw and reserve 22,684 acres of BLM-managed public lands to preserve the lands for NASA's satellite calibration activities. NASA's current use of the playa for satellite calibration could continue undisturbed, ensuring Earth-observing satellite data acquired from space are able to be collected and disseminated, resulting in a significant benefit to multiple sectors of the U.S. economy and American well-being, health, research, education, and security. NASA's Proposed Action will not result in the direct creation of any new jobs; however, adverse effects to the continued growth of the U.S. satellite industry would be avoided. Existing staff would continue to travel to the site to deploy equipment, though this would result in minimal overall contribution to the local economy. Because the lands would remain under BLM's administrative jurisdiction if the land withdrawal were approved, the Proposed Action would not reduce, or otherwise affect, the amount of statutorily authorized PILT Nye County receives for the WAA.⁶

During the public meeting held after notice of NASA's application for land withdrawal was published in the *Federal Register* (FR; 86 FR 22703, Apr. 29, 2021), several commercial enterprises, non-profit associations, and local government entities raised concerns associated with the potential economic effects associated with restricting mineral leasing and oil and gas production activities on the RRV playa (Appendix 1B). As discussed previously, oil and gas exploration and production subject to VERs would be unaffected by the Proposed Action, thereby allowing the positive economic effects from these activities to

⁶ Refer to the definition of "entitlement land" in 31 USC § 6901

continue. For purposes of analysis, NASA assumes that no new mineral mining activities subject to the Mining Law would occur on the RRV playa under the Proposed Action. The future regional job growth connected to mining on the RRV playa and associated socioeconomic effects is uncertain, given the significant environmental and regulatory approval requirements associated with current techniques employed for mineral extraction and the nascent state of less impactful extraction techniques (refer to Section 2.2, *No Action Alternative*, for further explanation). Nonetheless, assuming mineral mining was ultimately feasible on the RRV playa, there could be a moderate adverse impact to the regional economy, including Nye County, from the restrictions to mining operations on the playa if NASA's land withdrawal application is approved. However, FLPMA 20-year withdrawals are reviewed prior to their termination date; should mining techniques for lithium and other minerals reach the point at which non-interference with NASA's satellite calibration purposes can be guaranteed, a withdrawal may no longer be the appropriate legal instrument for protection of those purposes and alternative measures could be considered.

Although low-income populations and tribal communities are in Nye County, there would be no effect on low-income populations or tribal communities from the Proposed Action, because the Proposed Action would result in no change from the current conditions. While these communities could benefit economically from increased mining on the playa, future growth connected to mining on the RRV playa and associated socioeconomic effects is uncertain, given the significant environmental and regulatory approval requirements associated with current techniques employed for mineral extraction and the nascent state of less impactful extraction techniques (refer to Section 2.2, *No Action Alternative*, for further explanation).

3.4.2.2 No Action Alternative

Under the No Action Alternative, the lands would not be withdrawn and current activities would continue without new restrictions or limitations. Absent the withdrawal, all forms of appropriation under the public land laws, including location and entry under the mining law and disposition of resources under the mineral and geothermal leasing laws, could continue. Any future requests for authorization for resource extraction or use on the playa that are subject to BLM's jurisdiction would undergo appropriate environmental and other review. As explained in Section 2.2, *No Action Alternative*, lithium and other mining activities could increase on the RRV playa under the No Action Alternative; however, any assumptions about possible future mining activities that may be considered, including their technical and economic feasibility, is not reasonably foreseeable and the socioeconomic impacts of future mining cannot be accurately quantified at this time (refer to Section 2.2, *No Action Alternative*, for more detail).

Depending on the feasibility of future mineral extraction activities, under the No Action Alternative, there could be a benefit to the regional and national economy from increased production of critical minerals, which would need to be balanced against expected moderate, long-term adverse effects to those sectors of the national economy that rely on accurate Earth-observing satellite data. Specific details and effects of approving any future proposed mining plans of operations are beyond the scope of this analysis. Under the No Action Alternative, if mining operations on the RRV playa are proposed in the future, BLM would conduct appropriate site-specific environmental and other review, including, as necessary, consideration of alternatives, project design criteria, and mitigation measures.

3.5 Land Use (Authorizations, Recreation, Grazing and Visual Resources)

This section describes the land use resources for the Proposed Action, including land use authorization, recreation, livestock grazing, and visual resources. The region of interest is the WAA.

3.5.1 Affected Environment

3.5.1.1 Land Use Authorization

The WAA is entirely located within the administrative boundaries of BLM-managed land. Existing land use authorizations within the WAA include grants, leases, permits, and ROW. The placement of NASA's satellite instruments currently operates under existing ROWs issued by BLM to NASA and University of Arizona. A 1-mile-long access road is used to access oil and gas wells and their production facilities.

3.5.1.2 Recreation

FLPMA authorizes BLM to manage public lands under the principles of multiple use and sustained yield, which includes recreational use. BLM also uses BLM Manual 8320, BLM Manual 6330, and BLM Handbook H-8320-1 as guides for planning and managing recreation on public lands (BLM, 2011, 2012, 2014). These documents provide details and direction for Wilderness Study Areas and Recreational Management Areas, including Special Recreation Management Areas and Extensive Recreation Management Areas.

The WAA is within the BLM Tonopah Field Office's planning area. A wide variety of dispersed recreation occurs year-round on public land in the Tonopah Field Office planning area, including in the WAA (BLM, 1997). Dispersed recreational activities in the WAA may include, but are not limited to, off-highway vehicle use, camping, hiking, biking, sightseeing, hunting, wildlife viewing, and roller sailing. To date, there have been no requests for Special Recreation permits in the WAA. Additionally, there are no BLM-developed recreational facilities or Special Recreation Management Areas in the WAA. The adjacent RRV WMA provides recreational opportunities such as birdwatching; however, this area is outside the WAA. There are no current statistics or available data to describe usage of the WAA for dispersed recreation.

3.5.1.3 Livestock Grazing

BLM administers permits and leases held by ranchers who allow their livestock to graze on designated allotments. The WAA is a part of the Butterfield and Nyala cattle grazing allotments. The Butterfield Allotment has 10,805 acres and 4,776 Animal Unit Months and the Nyala Allotment has 326,220 acres and 13,255 Animal Unit Months (BLM, 2021). However, because there is no vegetation on the RRV playa, no livestock grazing occurs within the WAA.

3.5.1.4 Visual Resources

Currently, visitors at the RRV playa experience an open, dry lakebed with existing oil and gas operations (BLM, 2011). BLM's Visual Resources Management (VRM) Program is responsible for inventorying, planning, and managing the quality of the public lands' visual resources. Within the program, BLM assigns areas to one of the four visual classes based on scenic quality, visual sensitivity, and distance zones. Classes I and II are the most valued; Class III represents a moderate value and Class IV represents the least value (BLM, 2011). BLM categorized the RRV playa as VRM Class IV, which allows for significant change of the viewshed.

3.5.2 Environmental Consequences

3.5.2.1 Proposed Action

Under the Proposed Action, the Secretary of the Interior would withdraw and reserve 22,684 acres of BLM-managed lands to preserve the lands for NASA's satellite calibration activities. NASA would install additional signs requesting that people not disturb the site surface (Figure 3-1); however, there would be no fencing installed to restrict access to the playa.

The Proposed Action would not restrict recreational activities that currently occur on the playa, and indeed might allow more such recreational activities to occur because of the expected limitation in mining activities on the playa. Should the Secretary withdraw and

reserve the WAA for NASA's satellite calibration purposes, NASA and BLM would enter into an agreement specifying the types of uses that NASA would prefer BLM consult with NASA on before approving, and only activities determined not to be inconsistent with the purposes of the land withdrawal would be considered.

The Proposed Action would not involve the construction of permanent infrastructure that would result in major modifications of the existing character of the landscape or the installation of light sources that would affect the view of nighttime skies. Livestock would continue to have access to the site, given the lack of fencing, though only transient activities would be expected considering the lack of vegetation. Future ROW and special use permit applications, which would not result in changes to the playa's unique topographical features, would be considered by BLM in coordination with NASA under any relevant agreement. Because there may be some restrictions to future land use activities, the Proposed Action would result in a minor, long-term, adverse effect on overall land use in the region.

3.5.2.2 No Action Alternative

Under the No Action Alternative, the lands would not be withdrawn, and current activities would continue. Absent the withdrawal, all forms of appropriation under the public land laws, including location and entry under the mining law and disposition of resources under the mineral and geothermal leasing laws, could continue. Any future requests for authorization for resource use on the playa that are subject to BLM's discretion would undergo appropriate environmental and other review. There would be no effect on land use from the No Action Alternative under current conditions. Changes to land use with the implementation of any future proposed activities would be evaluated by BLM.

3.6 Cumulative Impacts

Cumulative impacts are defined as impacts on the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts must occur to the same resources, in the same geographic area, and within the same period for the Proposed Action and other projects. Because no-to-negligible effects on cultural, biological, geological, and water

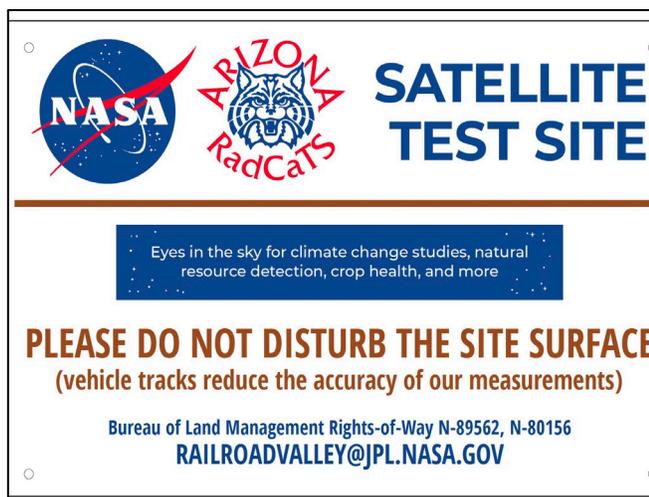


Figure 3-1. Example of Sign at RRV

resources would result from the Proposed Action, there is no potential for the Proposed Action to contribute to significant cumulative effects on these resources.

NASA’s proposed land withdrawal is in Nye County, Nevada, which is also the location of several federal land withdrawals and other federally owned land (Figure 3-2) (DoD, 1991). These previous land withdrawals and other federally owned land have resulted in a cumulative reduction in the acreage available for multiple land uses, including mineral exploration in Nye County (Table 3-3). However, unlike some of the areas withdrawn for defense purposes, NASA’s withdrawal would not result in a complete removal of public access and multiple use. No fences would be installed to bar entry to the site and passive uses that do not affect the surface of the playa would not be prohibited. Signs requesting that people avoid disturbance would be placed in the WAA. The overall acreage of federal land in Nye County would not increase as a result of the Proposed Action, because the land is currently, and will remain, managed by BLM; therefore, the cumulative effect to land use would be minimal.

Table 3-3. Estimated Acreage of Federally Owned Land in Nye County, Nevada

Agency	Approximate Area (acres)
BLM	6,550,000
Department of Defense (DoD)	1,900,000
U.S. Forest Service	1,900,000
Department of Energy	870,000
National Park Service	107,000
Federally Recognized Tribal Land	43,000
USFWS	25,000
Total federal land in Nye County	11,395,000
Nye County total land area	11,636,429

Questions were raised regarding the cumulative effects associated with the reduction of land available for mineral extraction in Nye County and the effect on the regional economy (Nye County, 2021) and several individuals also commented on the potential lost economic benefit associated with restricting future mining operations (Appendix 1B). All VERs would remain undisturbed under the Proposed Action. Specific details and effects of approving any future proposed mining plans of operations are beyond the scope of this analysis. However, it would be unreasonably speculative to hypothesize what those activities may look like or the cumulative impacts associated therewith, given the non-utility of proven lithium hard rock mining techniques (for example, open pit mining) to extract and produce lithium from a brine-based lithium resource; the high intensity water use required to produce lithium from surface-located evaporative ponds; and the nascent state of extraction and production processes which may, at some time in the future, be available for direct lithium extraction and which may avoid significant surface-disturbing activities or high intensity water use (refer to Section 2.2, *No Action Alternative*). If future mining operations are proposed on the RRV playa, BLM would conduct appropriate site-specific environmental and other review, including, as necessary, consideration of alternatives, project design criteria, and mitigation measures. Noting that land withdrawals under FLPMA are for a 20-year period and are reviewed prior to their termination date, should mining techniques for lithium or other minerals reach the point at which non-interference with NASA’s satellite calibration purposes could be ensured, then NASA, in consultation with BLM, would evaluate whether a land withdrawal continues to be the appropriate legal instrument for protection of the playa for NASA’s satellite calibration activities and alternative measures could be considered.

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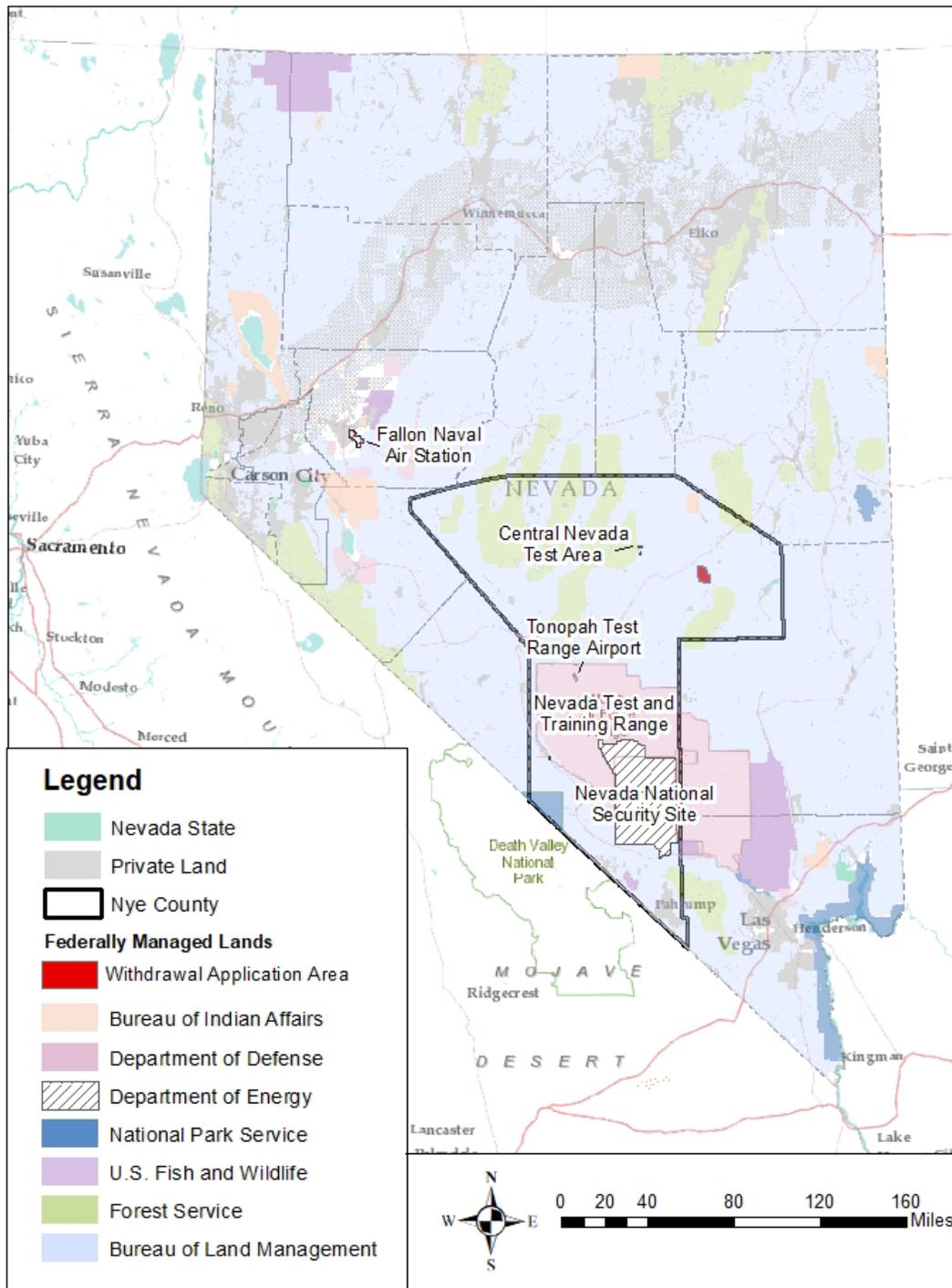


Figure 3-2. State of Nevada Land Ownership and Management

4. Consultation and Coordination

NASA worked with several agencies and organizations while developing this EA. The following is a list of the individuals who contributed to this EA.

4.1 Federal Agencies

4.1.1 National Aeronautics and Space Agency

Amy Keith – NEPA Lead, Headquarters

Michael Henry – Withdrawal Management Lead, Science Mission Directorate/Policy Branch

Hal Maring – Withdrawal Technical Lead, Science Mission Directorate/Earth Science Division

Andrew Rowe – Legislative Affairs Specialist, Office of Legislative and Intergovernmental Affairs

Jennifer Troxell – Senior Interagency Program Specialist, Office of International and Interagency Relations

Christopher DiMisa – Interagency Program Specialist, Office of International and Interagency Relations

Kate Becker – Executive Officer, Science Mission Directorate/Earth Science Division

Karen St. Germain – Earth Science Division Director, Science Mission Directorate

Stefanie Sass – Legislative Affairs Specialist, Office of Legislative and Intergovernmental Affairs

4.1.2 Department of Interior and Bureau of Land Management

Robert Smith – NEPA Manager/Planning and Environmental Compliance Coordinator, Battle Mountain District Office

Edison Garcia – Land Law Examiner/Withdrawal Lead, Nevada State Office

Doug Furtado – District Manager, Battle Mountain District Office

Perry Wickham – Field Manager/Authorized Officer, Tonopah Field Office

Jonah Blustain – Assistant Field Manager, Tonopah Field Office

Wendy Seley – Realty Specialist and Land Use Authorization, Tonopah Field Office

Cassandra Albush – Cultural Resources and Paleontology Specialist, Tonopah Field Office

Wilfred Nabahe – Native American Coordination and Consultation Specialist, Battle Mountain District Office

Logan Gonzales – Recreational, Visual, Wilderness, and Areas of Critical Concern Specialist, Tonopah Field Office

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Kristin Reid – Geology/Minerals, Hazardous and Solid Waste Specialist, Tonopah Field Office

Jonathan Hall – Mining Law Administration Specialist, Tonopah Field Office

Daniel Curnutt – Mining Law Administration Specialist, Nevada State Office

John Callan – Hazardous and Solid Waste Specialist, Nevada State Office

Brandon Crosby – Wildlife, Special Status Species, Migratory Birds, Noise Specialist, Tonopah Field Office

Brianna Brodowski – Wild Horses and Burros Specialist, Tonopah Field Office

Thomas Gibbons – Water Quality/Quantity, Wetlands/Riparian Zones, Floodplains Specialist, Mount Lewis
Field Office

Thomas Mendoza – Grazing Management, Noxious Weeds, and Invasive Non-Native Species, Soils,
Vegetation Specialist, Tonopah Field Office

Mike Harmening – Cadastral Specialist, Tonopah Field Office

KC Shedden – Forestry Specialist, Tonopah Field Office

Frank Giles – Climate Change, Noise, Air Quality Specialist, Tonopah Field Office

4.1.3 Federally Recognized Tribes

Warren Graham – Chairman, Duckwater Shoshone Tribe

Diane Buckner – Chairwoman, Ely Shoshone Tribe

Brian Thomas – Tribal Chairman, Shoshone-Paiute Tribes Duck Valley Indian Reservation

4.1.4 State and Local Agencies

4.1.4.1 Nye County

Brett Waggoner – Director of Planning

Lorinda Wichman – Natural Resources Office

Mary Ellen Giampaoli – Environmental Compliance Specialist

4.1.4.2 Nevada Department of Wildlife

Alice Ready – Biologist III, Data and Technology Services

4.1.4.3 Nevada Division of Natural Heritage

Eric Miskow – Biologist/Data Manager

5. List of Preparers

Table 5-1 provides the list of individuals who prepared this environmental assessment while under contract with NASA.

Table 5-1. List of Preparers

Name	Role	Experience
Sara Jackson, PMP	Project Manager	B.S., Environmental Studies; 22 years of experience
Michelle Rau, PMP	NEPA Lead	M.S., Business Administration; B.S., Ecology and Evolutionary Biology; 25 years of experience
Emily Gulick, CEP-IT	Environmental Planner	B.A., Environmental Studies; B.A., Geography; 5 years of experience
Christina McDonough, PE	Water Resource Specialist	M.S., Civil Engineering; B.S., Civil Engineering; 26 years of experience
Fatuma Yusuf, PhD	Economist	PhD., Agricultural Economics, M.S., Statistics, M.A., Agricultural Economics, B.S., Range Management; 30 years of experience
Joe Thacker, PG	Geologist	M.S., Geology; B.S., Geology; 30 years of experience
Keara Amble	NEPA Support	B.S., Environmental Management and Protection; 2 years of experience
Karen Sanders	Technical Editor	J.D., Law; B.A., Anthropology; 25 years of experience

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Appendix 1A
Technical Requirements for Passive Earth Observing
Satellite Instrument Calibration

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Appendix 1A – Technical Requirements for Passive Earth Observing Satellite Instrument Calibration

Prepared by NASA for the Railroad Valley, Nevada, Land Withdrawal Application

This technical appendix is divided into three sections for the purpose of addressing the following three questions:

1. Why can't onboard calibrators (OBCs) incorporated into instruments on satellites, or other passive satellite instrument calibration methods, replace vicarious calibration based on a well-characterized target on the surface of the Earth?
2. Why isn't federal land already withdrawn by the Department of Defense (DOD) suitable for use in vicarious calibration?
3. Why are 22,684 acres, the area of federal land NASA is requesting, necessary for NASA's vicarious calibration?

Passive sensor: A passive sensor is designed to measure electromagnetic radiation (i.e., light) emitted from the Earth's surface and its atmosphere. A passive sensor detects electromagnetic radiation and converts it into electronic signals.

Radiometric: Radiometric refers to the measurement of light intensity

Vicarious calibration: Vicarious calibration is a satellite sensor calibration method that uses a well-characterized feature on the Earth's surface as an absolute calibration standard to ensure that a satellite's instruments are operating correctly and within their requirements.

1. Why can't onboard calibrators (OBCs) incorporated into instruments on satellites, or other satellite calibration methods, replace vicarious calibration based on a well-characterized target on the surface of the Earth?

NASA's Earth observing instruments are calibrated for accuracy and precision before their integration onto spacecraft, test, and launch. In addition, some but not all of NASA's Earth observing instruments are built with OBCs (at costs \$10 million or more per instrument). While these OBCs contribute to post-launch instrument calibration, once in orbit the instruments begin to degrade, primarily because of the high radiation environment of space and mechanical wear and tear. OBCs are physically part of the instrument and are susceptible to the same processes which cause instrument degradation; the OBCs degrade alongside their instruments. Over time, the result is insufficient accuracy when OBCs are used as the sole calibration method.

Solar calibration systems, which use the Sun as a calibration standard, are also limited because the output of the Sun changes slightly over time which also slightly changes its reflectivity. In addition, the Sun is so bright that it oversaturates most of NASA's Earth observing sensors. The Sun is therefore not a reliable radiometric standard. Lunar calibration systems are similarly limited because the reflectivity of the Moon changes slightly as it orbits the Earth, based on its position relative to the Earth and the Sun. The Moon also is severely limited in its ability to serve as an absolute radiometric standard. In short, while these alternative calibration methods may contribute to instrument calibration, none enables NASA to sustain measurements with the consistently high precision and accuracy needed for use in most research and applications.

The only way to unambiguously and consistently maintain calibration and commensurate accuracy of passive optical Earth observing satellite instruments is to compare the sensors' observations of a stable target on the surface of the Earth that is already reliably characterized (preferably by ground-based or airborne sensors traceable to verified reference standards). NASA has ground-based sensors deployed at

Railroad Valley which it uses to characterize the surface of the playa using reference standards traceable to Department of Commerce's National Institute of Standards and Technology (NIST) standards. These instruments provide an absolute radiometric standard to which NASA can compare its passive optical Earth observing satellite sensor measurements.

2. Why isn't federal land already withdrawn by the Department of Defense (DOD) suitable for use in vicarious calibration?

To be suitable as a surface target for passive optical Earth observing satellite sensor calibration, an area of the Earth must meet a set of specific criteria:

- Large enough area (i.e., to encompass an area several times larger than the footprint of the satellite instruments to be calibrated)
- Spatially homogeneous (i.e., with consistent color and texture across the entirety of the site's surface)
- Flat enough surface (i.e., to minimize shadowing or shading)
- Moderately bright in reflectance (i.e., not so bright it saturates detectors but reflective enough to provide sufficient light to measure accurately)
- Clear skies (i.e., frequent cloudless periods)
- Low airborne particle concentration (i.e., negligibly affected by pollutants or wind-blown dust)
- Temporally stable (i.e., surface color and texture unchanging over years to decades)
- Accessible (i.e., U.S.-based scientists/engineers able to get to the site with relative ease)

After extensive searching and careful evaluation, NASA determined Railroad Valley to be the only suitable site in the U.S. that satisfies all the requirements listed above (Teillet et al., 2007).

Federal lands which have already been withdrawn for DOD use may host military facilities and are used to conduct military testing and training operations and serve other functions related to military readiness. DOD use is the primary purpose of those withdrawals, and for that reason withdrawn lands under DOD management present significant accessibility challenges to NASA scientists and engineers. In addition, due to the nature of military tests and training operations, land areas withdrawn for DOD use are subject to a range of surface-disturbing activities, which can suddenly render them unusable for NASA's satellite calibration activities. They do not possess the temporal stability over years and decades required for current and long-term satellite calibration. For these reasons, land withdrawn for DOD use does not satisfy the requirements listed above and is unsuitable for vicarious calibration.

P. M. Teillet, J. A. Barsi, G. Chander, K. J. Thome, "Prime candidate Earth targets for the post-launch radiometric calibration of space-based optical imaging instruments", Proc. SPIE 6677, Earth Observing Systems XII, 66770S (5 October 2007); doi: 10.1117/12.733156; <https://doi.org/10.1117/12.733156>

3. Why are 22,684 acres, the area of land that NASA is requesting, necessary for NASA's vicarious calibration?

The land area required for post-launch vicarious satellite sensor calibration is proportional to the size of a single pixel footprint of the sensor. The size of the single pixel footprint is defined by the sensor optics, detector sensitivity, sensor electronics, and the distance between the satellite and the surface of the Earth. Each satellite mission is designed to produce data with sufficient accuracy and precision to enable scientists to address important scientific questions and also often has a range of applications for policy and decisionmakers in government and the private sector.

Approximately 70% of the light reflected from the Earth from a single pixel area measured by a nadir (downward) pointing satellite sensor comes from the single pixel immediately under the satellite. Primarily because of sensor non-idealities, approximately 30% of the reflected light detected comes from pixels surrounding the single target pixel. Figure 1 illustrates this effect.

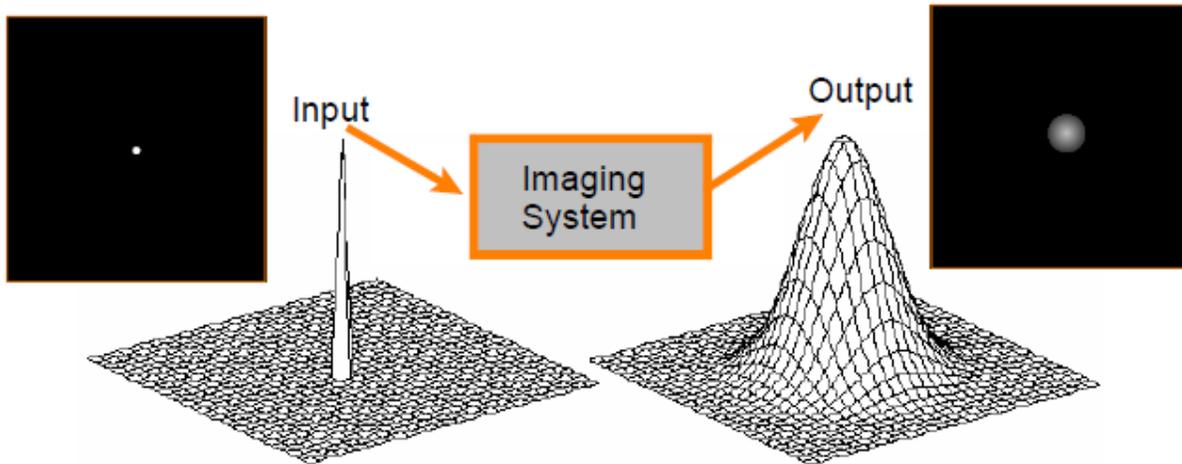


Figure 1. The input signal on the left is detected by the optical satellite sensor imaging system as the output signal on the right.

Thus, proper calibration of optical satellite sensors requires the target pixel on the Earth's surface be surrounded by eight pixels of nearly identical optical properties.

Relatively small deviations from the ideal reflectance from the pixels surrounding the target pixel can result in significant errors. Figure 2 quantifies the potential errors.

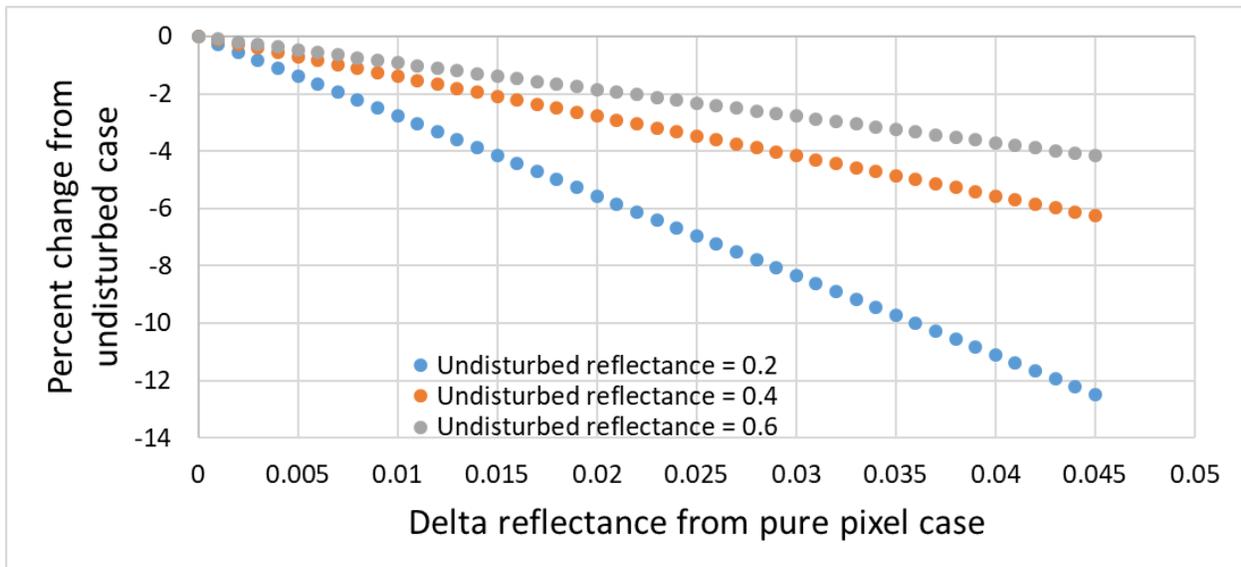


Figure 2. The percent signal error caused by non-ideal reflectance measurements or Delta reflectance for three levels of reflectance, where 100% reflectance is a reflectance of 1.0.

For example, a 5% deviation from the expected reflectance for a case of 0.2 reflectance will result in a delta reflectance (error or negative bias) of 0.02 or 10%. Errors of his magnitude are problematic because the measurement of certain gases (e.g., carbon dioxide) require measurement errors of $\leq 1\%$.

A representative list of NASA's current and foreseeable future passive sensor fleet is presented in Table 1 below. In addition, the single pixel size and calibration area needed for vicarious calibration are listed.

Satellite instrument	Nominal ground footprint (i.e. pixel) (wavelength > 2 μm)	Cal area needed (3 x 3 pixel)	
		km ²	acres
GeoCarb	7.0 km x 4.5 km (at RRV)	290	72,100
TEMPO (UV-Vis)	5.5 km x 2.4 km (at RRV)	120	29,500
OCO-2, OCO-3	1.3 km x 2.25 km	27	6,670
MODIS on Terra, Aqua	1 km	9	2,230
GOES [operated by NOAA]	1 km	9	2,230
VIIRS [operated by NOAA]	750 m	5	1,250
GLIMR (UV-Vis-SWIR)	350 m	1.1	272
MISR	250 m (nadir) 1.1 km (off nadir)	0.7 10	170 2,480
Landsat [operated by USGS]	30 m	0.008	2
Commercial & Defense*	<15 m	0.002	0.5

*calibration indirectly using MODIS data calibrated using RRV

NASA has requested 22,684 acres be withdrawn from public and private use to enable NASA to continue to use Railroad Valley for post-launch calibration of passive optical sensors. All the sensors listed above, except TEMPO and GeoCarb, have 3 x 3 matrices of pixels whose area is smaller than the requested 22,864 acres. All those sensors, except TEMPO and GeoCarb, can be calibrated using approximately 6,700 acres of Railroad Valley.

When NASA initially submitted the withdrawal application, NASA intended to request an area of between 4,500 and 7,000 acres. After NASA had already initiated the withdrawal application process but before the application was finalized, NASA's GeoCarb satellite mission was confirmed. The GeoCarb sensor requires post-launch vicarious calibration using a well characterized target on the surface of the Earth. The single pixel footprint for GeoCarb is 4.5 km x 7.0 km which is 8,010 acres and the 3 x 3 pixel matrix area is 72,100 acres. Thus, the need to calibrate GeoCarb justifies requesting at least 22,684 acres.

The requested withdrawal area will enable calibration of GeoCarb despite the requested withdrawal area of 22,684 acres being less than the 72,100 acres needed to calibrate GeoCarb. Two factors mitigate the withdrawal area being smaller than the GeoCarb calibration area. First, the size of the requested withdrawal area is equivalent to 2.8 pixels and will account for significantly more than 70% of the reflected light from the calibration target. Similarly, the 49,416-acre area surrounding the requested withdrawal area which will make up the remainder of the 72,100 acres, will account for well less than 30% of the reflected light from the target area. Consequently, any optical non-idealities in the 49,416-acre area will affect a relatively small fraction of the reflected light used for calibration. Second, satellite

imagery shows the GeoCarb calibration area outside the withdrawal area is optically similar to the center of the playa and the optical non-idealities are relatively minor. Indeed, the validity of this approach has been tested. The Japan Aerospace Exploration Agency successfully calibrated their GOSAT sensor, which makes similar measurements to the GeoCarb sensor, using Railroad Valley. The GOSAT single pixel dimensions are 13.2 km x 13.2 km, which results in a 3 x 3 pixel matrix area of 387,500 acres, much larger than the area needed for GeoCarb calibration. The success of the GOSAT calibration validates the assertion that NASA's request for the withdrawal of 22,684 acres of Railroad Valley is sufficient to perform post-launch calibration of NASA's fleet of passive optical satellite sensors, including GeoCarb.

GeoCarb will be the first satellite in an anticipated future generation of greenhouse gas (GHG) observing satellites that will be able to contribute to near-real-time monitoring of GHG sinks, sources, and fluxes across the continent. All the future satellites developed for this purpose are expected to have the same or similar requirements as GeoCarb for its post-launch vicarious calibration. Other future satellites with sensors whose purpose will be to measure other geophysical variables will also use Railroad Valley for vicarious calibration.

In summary, NASA's requested withdrawal of 22,684 acres at Railroad Valley will:

- Enable post-launch vicarious calibration of NASA's and partners' passive optical Earth observing satellite instruments to ensure their continued accuracy, even after their onboard calibrators have degraded
- Reduce the need for onboard calibrators for many Earth observing instruments, saving NASA and taxpayers \$10 million dollars or more per sensor
- Ensure Earth observations are produced with sufficient continuous fidelity to be used by researchers and by policy and decision makers to in a range of societal applications
- Enable a future generation of greenhouse gas monitoring satellites in that will rely on Railroad Valley for calibration

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Appendix 1B
Response to Comments

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BLM Public Comments for NASA's Proposed RRV Withdrawal

Comment Number	Segment Number	First Name	Last Name	Affiliation	Comment	Response	Date Comment Received	Comment Type	Attachments
1		Russel	Brandon	LabSphere	Hello, I am writing to voice my support for the application by NASA for withdrawal and reservation of lands at Railroad Valley, Nye County, Nevada. The area specified for satellite calibration activities is of critical importance to governmental, scientific, and commercial Earth Observation. Railroad Valley is a uniquely suitable location of the type that exists almost nowhere else, and must be kept in a pristine state to be of highest utility. This location is of primary use in ensuring the accuracy of satellite data from NASA, NOAA, USGS, and companies including Planet Labs, Maxar, and other satellite operators in the United States and globally. The data from this site provides direct economic value, and underpins measurements necessary for weather forecasting, climate and environmental science and management, disaster response, agricultural and natural resource management and extraction, as well as national security, intelligence, and defense operations. I support NASA's proposed withdrawal in my professional capacity as an Earth Observation and remote sensing scientist, who works directly with satellite data calibrated by NASA at Railroad Valley.	NASA appreciates your support of the U.S. Earth observing mission from space and agrees on the importance of Railroad Valley for satellite calibration and ensuring the accuracy of Earth observations from space. NASA also agrees that the site is important for the calibration of U.S. commercially operated satellites. The entire nation benefits from the U.S. investment in the nation's Earth observing satellite fleet, which provides the unique vantage point of space for monitoring of drought, wildfires, water resources, land use, weather, etc.	5/3/2021	Written	
2		Joshua	Hudson	LabSphere	I support the effort to preserve Rail Road Valley via withdrawal. This site is a well know and studied site with world wide use in the study of climate, image quality, and calibration. There are very few of these sites around the world that are so well known and understood, others in the world are not easily or safely accessible due to civil unrest or they are located in a contested region. Preserving this region is very important to the global community.	NASA appreciates your support of the U.S. Earth observing mission from space and agrees on the importance of Railroad Valley for satellite calibration and the quality of Earth observations from space.	5/3/2021	Written	
3		Jeffrey	Holt	LabSphere	I strongly support and urge approval for the NASA request to set aside some or all of the requested area. This area and the associated NASA mission are vitally important parts of Remote Sensing calibration and this work impacts many fields including climate science.	NASA agrees on the importance of Railroad Valley for remote sensing satellite calibration and the field of climate science.	5/3/2021	Written	
4		Steven	Degenfelder	Kirkwood Oil and Gas	Kirkwood Oil and Gas LLC hereby submits these comments to you as the designated contact person for the Bureau of Land Management (BLM) recently published in the Federal Register concerning a proposed land withdrawal application by the National Aeronautics and Space Administration (NASA) in connection with the Jet Propulsion Laboratory for lands within Railroad Valley in Nye County, Nevada. As you are aware, NASA has made an application to BLM, similar to the attached brochure, for the withdrawal of some 43,000 acres in Railroad Valley in Nye County, Nevada for their anticipated operations. The withdrawal would preclude oil and gas leasing and development along with other mineral development. There is existing oil and gas well production and nonproducing oil and gas leases in and near the withdrawal area in Railroad Valley. Kirkwood Oil and Gas, LLC and its affiliate, Wesco Operating, Inc., are part of a family owned Wyoming company that employs over 50 people including some in Nevada. The Company operates over 600 producing wells in the States of Nevada, Utah, Wyoming, North Dakota, Montana, and Colorado. In addition to operating existing producing wells, the company's exploration division develops new drilling prospects. These new drilling prospects involve a great amount of risk capital, but the company feels finding new oil and gas reserves is vital to its continued existence. The company holds over 100,000 acres of federal oil and gas leases in the state of Nevada, some near and in the proposed withdrawal area. These leases, along with other leases held by unaffiliated third party companies were purchased long before the NASA application. Therefore, because of the company's ongoing exploration efforts in Nevada, it has a vested interest in the NASA application. In the event the application is approved, Kirkwood would be harmed. Oil and gas produced in the state of Nevada pays a severance tax to the state and an ad valorem tax to the county. In addition, the state receives 48% of any lease bonus payments, yearly rentals and royalties paid on federal oil and gas leases. As you know, federal minerals make over 95% of Nevada's mineral estate. In addition to those taxes and royalties and unlike most states, Nevada's local counties also assess a property tax on non-producing federal oil and gas leases. If an area of potential oil and gas exploration is withdrawn by BLM, the applicant seeking such withdrawal should be required to negotiate a settlement with existing oil and gas leaseholders for the irreparable harm the approved application will cause the lessees. Without this requirement, the private property rights associated with the existing oil and gas leases constitutes a taking by the federal government. For the reasons stated above, Kirkwood Oil and Gas LLC objects to and hereby appeals the NASA Application and requests BLM to make any approval conditional on NASA securing a settlement with Kirkwood and other lessees for the damages their actions will cause by the approval of its application. Kirkwood requests a response to its request within thirty (30) days from the date of this letter. If there is additional information you require to consider this request, please advise.	NASA appreciates your comment. The area requested for withdrawal (of 22,684 acres, not 43,000 acres) would be subject to valid existing rights within the withdrawal area, including existing leases and drilling permits. A discussion of the mineral resources on the subject land area and an analysis of the associated socioeconomic impact of the withdrawal is included in Sections 3.2.1.4 and 3.4.2.1 of the EA, respectively.	5/19/2021	Written	
5		James	Ingraffia	Unknown	Respectfully, My name is James Ingraffia. I am opposed to your seizing land in Railroad Valley (RRV) to study climate change when we've already established that it's real and the atmospheric station in Hawaii already studies CO2. You, by stopping development of lithium and lithium supply chain metals recovery in RRV are contributing to the problem. Essentially, your actions are boiling down to "there's a problem that we want to keep worrying about but allow to be solved." It's self-contradictory. Let RRV be development for lithium recovery for our batteries that we can put in cars and recharge with geothermal or even powerplants which are so much more efficient than both powerplants AND burning fossil fuels for energy in our cars. Be a part of the SOLUTION. Essentially, your actions are boiling down to "there's a problem that we want to keep worrying about but NOT allow to be solved." It's self-contradictory.	Thank you for your comments. Earth observations from space are not only used for climate research. The entire nation benefits from the U.S. investment in the nation's Earth observing satellite fleet, which provides the unique vantage point of space for monitoring of drought, wildfires, water resources, land use, weather, etc. The Railroad Valley site is a unique resource for satellite calibration, unavailable anywhere else in the U.S., as explained in Section 1.2 of the EA. As such, NASA requires preservation of the unique surface characteristics of the land to ensure it can continue to be used for Earth observing satellite calibration activities.	5/20/2021	Written	

BLM Public Comments for NASA's Proposed RRV Withdrawal

Comment Number	Segment Number	First Name	Last Name	Affiliation	Comment	Response	Date Comment Received	Comment Type	Attachments
6		Laura	Leigh	Wild Horse Education	Do not offer parcels within HMAs. Wild horses and burros have a limited territory (12% of public lands) designated for their use. In Railroad Valley wild horses are already dealing with mining, permittees, etc. Can you please send me a map of proposed parcels?	There are no wild horses or burro management areas within the area requested for withdrawal. A map is included at Figure 1-3 in the EA.	6/7/2021	Written	
7		Susan	Kulawik	Bay Area Environmental Research Institute	I work for the Bay Area Environmental Research Institute. I am involved with the Geostationary Carbon Cycle Observatory (EVM-2) (GeoCarb) mission, launching in 2024. GeoCarb plans to utilize observations at Railroad Valley from orbit. This site is used to calibrate observations from space because the surface properties are very uniform and unvarying due to the lack of vegetation uniform soil. This is an important component of the GeoCarb as part of the on-orbit radiance calibration. This site is also used for other similar NASA instruments, like OCO-2 and OCO-3. This is the only location available in the western hemisphere for this calibration, and will be the only location available to GeoCarb, which will be located in geostationary orbit over the western hemisphere. The area GeoCarb will need will depend on the exact longitude GeoCarb is (which will be launched by a private company, and depends on what longitude that company needs, but will be between 85 and 105W). For 103W, I calculated that the dimensions needed are 5.2 km north/south and 7.1 km east/west, which includes a 1 km margin for pointing jitter.	NASA appreciates your comments on the importance of Railroad Valley for the calibration of NASA's current and future Earth observing satellites.	6/9/2021	Written	
8		Douglas	Willis	Unknown	Strongly opposed. The Railroad Valley is the most productive basin for oil and gas in the State. Withdrawal of oil and gas exploration leasing at this proven resource area would further hinder US energy development which is critical to energy independence and national security.	NASA appreciates your comment. The requested withdrawal would be subject to valid existing rights within the withdrawal area, including existing leases and drilling permits. A discussion of the mineral resources on the subject land area and an analysis of the associated socioeconomic impact of the requested withdrawal is included in Sections 3.2.1.4 and 3.4.2.1 of the EA, respectively.	6/18/2021	Written	
9		Dave	Stofa	Unknown	I represent a company that has a producing oil field in the area covered by the withdrawal. I have several questions for you concerning the effect of the withdrawal on my client's operations.	NASA thanks you for your correspondence. Any withdrawal would be established subject to valid existing rights including the terms of existing leases.	6/21/2021	Written	
10	a	Tyre	Gray	Nevada Mining Association	The Nevada Mining Association (NVMA) respectfully submits the following comments regarding the withdrawal of nearly 30,000 acres in Railroad Valley, Nevada from mineral entry for the purposes of National Aeronautics and Space Administration's (NASA) satellite calibration system. A two-year segregation became effective upon publication in the federal register and comments are being solicited for a twenty-year withdrawal contingent on the National Environmental Policy Act (NEPA) decision making process. To ensure our position is clear, the NVMA is opposed to the ongoing land segregation and to the proposed 20-year withdrawal. 1. The Nevada Mining Association and Mining in Nevada. For over a century, the Nevada Mining Association has acted as the public voice of Nevada's world leading mining industry by representing members who comprise every link in the supply chain in federal, state, and local policy matters, public relations, workforce and community support. With a diverse membership of almost 500 individuals and companies, NVMA possesses a detailed understanding of Nevada's mining industry. Mining is a global endeavor, and the competition and stakes are high. Accessibility of mineral resources and the costs of doing business weigh heavily on a decision to mine in the U.S. versus South America, Africa, or other mineralized areas of the world. Nevada, due to the abundance of minerals critical to our green future, is of significant strategic importance to the U.S. in terms of developing the minerals that will aid in climate change, technological innovation, energy independence, and economic stability of our great nation. By failing to invest and develop domestic metallic and industrial mineral mining, the U.S. leaves itself at the whim of foreign sources and unintentionally condones practices that are both repugnant to our social and environmental sense. Thus, making Nevada mining a national security interest, a social justice interest, and an environmental necessity.	NASA appreciates the Nevada Mining Association's correspondence and recognizes the importance of the mining industry to Nevada's economy. As required by the BLM's regulations, NASA has prepared a mineral resource potential report, and a discussion of the mineral resources on the subject land area and an analysis of the associated socioeconomic impact of the requested withdrawal, including with respect to mining, is included in Sections 3.2.1.4 and 3.4.2.1 of the EA.	6/25/2021	Written	
10	b	Tyre	Gray	Nevada Mining Association	The Nevada mining industry is spread out over one of the largest, most sparsely populated states in the country, yet its overall footprint represents much less than 1/2 of 1% of the state's landmass, approximately 200,000 acres (personal correspondence, Nevada State Office, Bureau of Land Management, and the Nevada Division of Environmental Protection). The State of Nevada and NVMA members pride themselves on the decades spent crafting industry leading regulations grounded in fairness and sound science and policy. The unique convergence of Nevada's geographical, geological, vegetative, and biotic qualities must be taken into consideration when developing land use management strategies. Finally, 86% of the landmass of Nevada is managed by federal entities. As a result, Nevada, more than any other state, feels the impacts of overly restrictive or ineffective land use policies. For these reasons, the Association and its members are opposed to the proposed withdrawal for its disproportionate impacts to the exploration/mining industry and private commerce.	NASA appreciates the Nevada Mining Association's comments. The potential impacts of the proposed action on the natural and cultural resources of Nye County are evaluated in Section 3 of the EA. As part of this analysis, NASA considered the subject land area's unique geographical, geological, vegetative, and biotic values. NASA also considered the social and economic impacts of the requested withdrawal, and notes that NASA's satellite calibration activities, as well as the use of the RRV plays for calibration of commercial satellites contribute to the social and economic well-being of the county, state, and nation.	6/25/2021	Written	

BLM Public Comments for NASA's Proposed RRV Withdrawal

Comment Number	Segment Number	First Name	Last Name	Affiliation	Comment	Response	Date Comment Received	Comment Type	Attachments
10	c	Tyre	Gray	Nevada Mining Association	<p>II. Federal lands are critical for mineral development and exploration/mining are legitimate rights on those lands. Western states account for 75% of our nation's mineral production. Currently half of the U.S. hard rock mineral estate is either off-limits or under restriction for mineral development. Nevada is perhaps the most mineral rich state in the U.S. and much of its potential is unknown, unrealized, or underdeveloped. Currently, 86% of the state is under the management of the federal government. The policies and actions of the federal land managers have an immediate and direct impact on the discovery and beneficiation of precious, strategic, and industrial minerals in the state. Four decades ago, Congress recognized the vast array of uses of public land (including mineral exploration and mining) and decreed that those lands be managed for the benefit of the public. FLPMA was enacted to ensure the BLM manages the public lands based on multiple use and sustained yield. "Multiple use management is a concept that describes the complicated task of achieving a balance among the many competing uses on public lands, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and [uses serving] natural scenic, scientific and historical values." NVMA recognizes the difficult task the BLM faces in managing public lands for multiple use and conserving the environment. Yet, mineral exploration and development are a crucial part of the BLM's multiple use mandate, and the agency must ensure that they are not unreasonably limited. To that end, FLPMA requires the BLM to foster and develop mineral activities; not stifle and prohibit such development. Public lands are to be managed to recognize the nation's need for domestic sources of minerals. The withdrawal is inconsistent with these mandates.</p>	NASA appreciates the Nevada Mining Association's comments. As required by the BLM's regulations, NASA prepared a mineral resource potential report and a discussion of the mineral resource potential of the subject land area and an analysis of the associated socioeconomic impact of the proposed action, including with respect to mining, is included in Sections 3.2.1.4 and 3.4.2.1 of the EA, respectively. As discussed in Section 2.1 of the EA, the BLM will continue to manage the lands requested for withdrawal under the Federal Land Policy and Management Act's (FLPMA) multiple use mandate, which includes management of lands in support of scientific values in addition to mineral values. The Secretary of the Interior has the authority to make, modify, extend, or revoke withdrawals of federal land in accordance with FLPMA. The purposes of such withdrawals may include limiting activities on federal land to maintain public values in the area or reserving the land for a particular public purpose or program.	6/25/2021	Written	
10	d	Tyre	Gray	Nevada Mining Association	<p>III. Lithium is an important component for our energy future. The U.S.'s dependence on foreign sources of minerals has doubled over the past two decades and is currently at a record high. According to the US Geological Survey's 2017 "Minerals Commodity Summaries", imports made up more than half of the apparent consumption of SO nonfuel mineral commodities, and the nation was 100% reliant on 20 of those. On top of that, less than half of the mineral needs of US manufacturing are met from domestic sources. This growing dependence on imports from other countries leaves the US vulnerable to disruptions from extended, complex, and fragile supply chains. Lithium is a perfect example. Just a few years ago, lithium was utilized primarily for medical purposes. It is now a vital element utilized in energy storage and has been designated a critical mineral by the National Academy of Sciences and the U.S. Geologic Survey. A mineral can be regarded as critical only if it performs an essential function for which no satisfactory substitute exists. Nevada is one of the very few places in the U.S. where lithium is known to exist and is the only place where lithium is actively being produced. The proposed withdrawal area contains significant lithium resources which are vital to resolving our national issues related to climate change, and energy production and storage. The nation's future is short-changed when domestic natural resources are removed from exploration and development.</p>	NASA appreciates the Nevada Mining Association's comments on the importance of lithium. As required by the BLM's regulations, NASA has prepared a mineral potential report and, as stated in Sec. 3.4.2.1 of the EA, NASA's mineral resource assessment found a high likelihood of significant amounts of dissolved lithium and other minerals in subsurface brine below, but not unique to, the withdrawal application area. While substantial concentrations of lithium may exist, the feasibility of mineral extraction within the area requested for withdrawal is currently unknown. The withdrawal application area also represents a unique resource for satellite calibration, unavailable anywhere else in the U.S., as explained in Section 1.2 of the EA.	6/25/2021	Written	
10	e	Tyre	Gray	Nevada Mining Association	<p>IV. The withdrawal action has the potential to negatively impact the economy of the State of Nevada. The total gross domestic product of the State of Nevada is approximately \$154 billion. Of this, mining's economic output is \$8 billion, or about 6% of Nevada's economy. The majority of this economic output occurs in rural Nevada, contributing to the economic and social vitality of the state's rural communities. Mining directly employs 12,000 Nevadans in high paying, skilled positions. It is estimated that for each mining job, four indirect positions are created. The industry also generates significant tax dollars that support schools, road construction, and other state and local functions. Exploration and mining in Nevada have been ongoing since well before statehood, but it is not the same industry it was in the 1860s. In 2021, technical innovation, corporate responsibility mandates, land reclamation, sensitive species consideration, and environmental protection are engrained in the modern exploration and mining business model. Experience has proven a variety of land uses can successfully and peacefully coexist with mineral exploration and mining without the implementation of draconian measures such as land withdrawals. In order for mining to continue to thrive and be a significant contributor to our national and state economies, new sources of mineral resources must be identified and developed. This is a long-term process that can take decades from exploration to actual operation. Exploration discoveries taking place today ensure economic vitality in the future in the form of jobs and economic diversification. The proposed withdrawal removes a vast track of land that has significant potential for a mineral important to the U.S. energy future. There are no concurrent social or economic benefits to the state or rural communities from the NASA satellite calibration operations. In fact, Nevadans had no idea Railroad Valley was used in this manner. The potential economic impacts of the loss of exploration and mining obviously outweigh the negligible economic impacts of the NASA calibration system.</p>	Section 3.4.2.1 of the EA includes an analysis of the socioeconomic impact of the requested withdrawal, including with respect to mining. NASA does not agree with the comment that the State of Nevada and rural communities do not receive social and economic benefits from NASA's satellite calibration operations. The entire nation benefits from the U.S. investment in the nation's Earth observing satellite fleet, which provides the unique vantage point of space for monitoring of drought, wildfires, water resources, land use, weather, etc. Nevada decisionmakers regularly rely on NASA Earth observations for key public and private services, including drought monitoring; water supply monitoring and management; wildfire and smoke situational awareness, response, and recovery; harmful algal bloom tracking; and soil moisture tracking for agriculture; as well as weather forecasting and monitoring.	6/25/2021	Written	

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10	f	Tyre	Gray	Nevada Mining Association	The mineral withdrawal is inconsistent with FLPMA. FLPMA at Section 103(c) (43 USC 1702), requires lands under management of the BLM adhere to the definition of multiple use. Under these provisions, the BLM must manage the land to allow a variety of uses. The wholesale exclusion of a particular land use (in this case, exploration, and mining) in the absence of coherent and comprehensive environmental and economic rationale is a clear violation of the Act. FLPMA at Section 103(c) (43 USC 1702), requires lands under management of the BLM adhere to the definition of multiple use. Under these provisions, the BLM must manage the land to allow a variety of uses. The wholesale exclusion of a particular land use (in this case, exploration, and mining) in the absence of coherent and comprehensive environmental and economic rationale is a clear violation of the Act. Furthermore, as a prerequisite to a withdrawal action, FLPMA section 204 requires the BLM submit to Congress a report containing information on the "... general geology, known mineral deposits, past and present mineral production, mining claims, mineral leases, evaluation of future mineral potential, present and potential market demands". NVMA expects and demands that Congress be informed of the mineral values being removed from the public domain by this action. The NVMA contends that BLM's actions, in both the short term and for the twenty-year withdrawal, are inconsistent and in conflict with the intent and language of FLPMA.	As discussed in Section 2.1 of the EA, the BLM will continue to manage the lands requested for withdrawal under FLPMA's multiple use mandate, which may include management of lands in support of scientific values as well as mineral values. Section 3.2.1.4 of the EA and the mineral potential report, prepared by NASA as required by BLM's regulations, discuss the mineral values of the subject land area. In addition, the Secretary of the Interior has the authority to make, modify, extend, or revoke withdrawals of federal land in accordance with FLPMA. The purposes of such withdrawals may include limiting activities on federal land to maintain public values in the area or reserving the land for a particular public purpose or program.	6/25/2021	Written	
10	g	Tyre	Gray	Nevada Mining Association	VI. Valid existing rights undefined. The Proposed Action withdraws nearly 30,000 acres from the General Mining Act of 1872, subject to Valid Existing Rights. On its face, this language appears to be a reasonable concession of the withdrawal criteria. However, the term "Valid Existing Right" (VER) is not defined in federal law or regulation, and it is not clear what mining rights and activities are to be protected (or not) from the proposed withdrawal action. Due to the lack of a concise legal definition, it is not possible to estimate the impacts and costs associated with the withdrawal as it relates to mining activities, the number of claims that might be subject to Validity Examinations (a currently required evaluation for obtaining a land patent), the timeliness of validity exams, or the economic and social impacts of the potential forfeiture of claims deemed not valid. The impacts associated with these uncertainties must be identified and quantified.	Section 2.1 of the EA discusses what constitutes a valid existing right on federal lands, including in the subject land area. Because the validity of any existing mining claims in the requested withdrawal area is outside the scope of this analysis, NASA's discussion of potential environmental impacts related to mining is necessarily qualitative in character and general in scope.	6/25/2021	Written	
10	h	Tyre	Gray	Nevada Mining Association	VII. The Federal Agencies do not have the expertise or resources to conduct validity examinations. A precursor to a determination of a VER for the granting of a land patent is a validity examination conducted by the federal agency. This is a time-consuming process that must be performed by knowledgeable and experienced personnel. Only a handful of mineral examiners are employed by the federal agencies, and as a result of retirement and turnover, those qualified staffers are dwindling. It is reasonable to assume the BLM cannot subject these claim to a validity examination in a timely fashion. It remains unclear if, while validity examinations are ongoing, the claim holder will be allowed to work their claims as required under the law, be required to pay the necessary claims fees as prescribed by federal and state law, or proceed with exploration and operational development, thus placing a de facto prohibition in place on further claim development or mining activities.	Issues related to BLM staffing and mineral patent applications are beyond the scope of the Proposed Action.	6/25/2021	Written	
10	i	Tyre	Gray	Nevada Mining Association	VIII. Once withdrawn from certain land uses, that land use is rarely restored. A critical component of the proposed action is the withdrawal of land from mineral entry for a period of 20 years (the maximum allowed under FLPMA). Similar federal actions (Wilderness Study Areas and federal defense reserves for example) have resulted in de facto long-term or permanent losses of land uses. It is reasonable to assume that, once the lands are withdrawn, that they will never be restored to multiple use. IX. NASA's withdrawal is another in a long line of proposals limiting mineral entry. For many years, the State of Nevada has been subjected to numerous land withdrawals limiting exploration, mining, recreation, and other land uses. These have come in many forms, from military withdrawals, nuclear testing and storage, wildlife habitat protection, wilderness, and national security just to name a few. Each time withdrawals occur, more of the nation and state's mineral resources are removed from evaluation and extraction and negative economic impacts result. The federal land managers must reign in these single interest withdrawals and take a critical look at how best to serve all the citizens of the state and nation.	The Federal Land Policy and Management Act of 1976 (FLMPA) allows for land withdrawals for up to a 20-year period, and NASA is applying for a 20-year withdrawal. The effects of a long-term withdrawal of the subject area are appropriately considered throughout the EA.	6/25/2021	Written	

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10	j	Tyre	Gray	Nevada Mining Association	X. Alternatives to NASA's satellite calibration system must be evaluated. In a December 11, 2018, presentation by David Crisp, Jet Propulsion Laboratory, California Institute of Technology, to the OCO-GOSAT Technical Interchange Meeting, it is stated that the Railroad Valley playa is the "Only instrumented site within the U.S. that is sufficiently homogeneous and undisturbed over a large enough area to enable vicarious calibration of large footprint instruments ... ". Neither Mr. Crisp nor the Federal Register Notice dated April 29, 2021, provide a basis for this claim or a rationale for the immediate land withdrawal. The Great Basin, which covers much of Nevada, contains innumerable undisturbed playas. The NVMA questions the statements made by Mr. Crisp and calls upon the BLM and NASA to provide evidence of the unique conditions of the Railroad Valley Playa and the lack of a suitable alternative in the western U.S. Obviously, NASA has recognized an issue of potentially competing land uses for years. We question why an abrupt and immediate land withdrawal is warranted at this time without any prior notice to the State of Nevada or the claimant. In light of the two-year withdrawal, the NVMA calls upon NASA and the BLM to provide all supporting studies and information as to why the Railroad Valley Playa is unique for the purposes identified, and why an immediate land withdrawal is necessary. The NVMA takes mineral withdrawals very seriously and their impacts to our industry and to the economic wellbeing of the State of Nevada. Thank you for your consideration of these comments.	NASA appreciates the Nevada Mining Association's comments. Section 1.2 of the EA includes an explanation of what makes Railroad Valley a unique resource for NASA. Table 1.1 in Section 1.2 lists the alternative sites considered by NASA with information on why each alternative site does not fully meet NASA's needs for satellite calibration or otherwise have the unique characteristics of Railroad Valley.	6/25/2021	Written	
11		Richard	Reid	Unknown	I strongly oppose withdrawal of public land in Railroad Valley, Nevada. There are important natural resources there that should be reserved for the use by the public, especially given the current need for renewable energy resources such as lithium. Far too much public land has already been appropriated by the military and other governmental agencies. These agencies should work together to share and utilize the lands they already appropriated. Thank you for consideration of my comments.	NASA appreciates your comment. As required by BLM regulations, a mineral resource potential report was prepared that includes an assessment of the lithium resource within the subject land area. A discussion of the mineral resource potential of the subject land area and an analysis of the associated socioeconomic impact of the proposed action, including with respect to lithium, is included in Sections 3.2.1.4 and 3.4.2.1 of the EA, respectively. The withdrawal application area represents a unique resource for satellite calibration, unavailable anywhere else in the U.S., as explained in Section 1.2 of the EA.	7/1/2021	Written	
13		Michael	Visher	Grant Canyon Oil and Gas LLC	We are writing today in regard to the proposed land withdrawal in Railroad Valley, Nye County Nevada. The application to withdraw and segregate 22,995.05 acres was made in late April 2021 by the National Aeronautics and Space Administration (NASA). For over 15 years, Grant Canyon Oil & Gas, LLC ("GCOG") has owned interests and operated the Sans Springs oil field that falls in the southeast portion of the 22,995 acreage block. GCOG has valid existing rights under the following Lease: Lessor: United States of America NVN-47646; Lessee: J. C. Gilmore; Date: February 1, 1988 Description: T7N-R56E, MDM; Section 2: SW/4; Section 11: NW/4, S/2; Section 12: E/2, W/2NW/4, SE/4NW/4, W/2SW/4, SE/4SW/4; Section 13: All; Section 14: NW/4NE/4, W/2, N/2SE/4; Section 24: NE/4, W/2NW/4, SE/4NW/4, S/2; Section 26: All; Section 27: SE/4. To date, more than 48 million barrels of oil have been produced from Railroad Valley oil fields, generating more than \$250,000,000 in revenue for the United States of America and the State of Nevada. Grant Canyon estimates that there are 750,000 remaining recoverable barrels of oil from the existing Sans Springs oil field. This does not include the discovery of several million more barrels of oil that could be developed under the large acreage block that Grant Canyon has existing rights to develop in the future. The removal of this land and Grant Canyon's existing rights would be significantly detrimental to our company, the other working Interest owners, employees, the local community, the State of Nevada and the United States of America. We ask that you take this into serious consideration when proceeding.	NASA appreciates your comment. A discussion of the mineral resource potential of the subject land area and an analysis of the associated socioeconomic impact of the proposed action is included in Sections 3.2.1.4. and 3.4.2.1 of the EA, respectively. The requested withdrawal would be subject to valid existing rights within the withdrawal area, including existing leases and drilling permits.	7/8/2021	Written	
14		Sue	Gaskill	Nevada Division of Water Resources	Project: E2021-255 NOTICE BLM Railroad Valley NASA Withdrawal - Nye County No comment on this project X Proposal supported as written AGENCY COMMENTS: NRS – Nevada Revised Statutes NAC – Nevada Administrative Code General: All Nevada water laws must receive full compliance. All waters of the State belong to the public and may be appropriated for beneficial use pursuant to the provisions of Nevada Revised Statutes (NRS) Chapters 533 and 534 and not otherwise. No use of any water required in support of this project, from any source, is allowed without the benefit of a permit or waiver issued by the Nevada Division of Water Resources.	No water use or other effects on water resources are expected as part of the proposed action. NASA understands that no use of any water required in support of this project from any Nevada jurisdictional source would be allowed without a permit or waiver issued by the Nevada Division of Water Resources. Section 3.4 of the EA includes a brief discussion of the impact of the proposed action on water resources.	7/13/2021	Written	
15		Jim	Balderson	Nevada Division of Environmental Protection Bureau of Safe Drinking Water	Attached please find a copy of the comments from the Nevada Division of Environmental Protection Bureau of Safe Drinking Water. ___x___ No comment on this project ___ Proposal supported as written	N/A	7/13/2021	Written	

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16	a	James	Doody	BNP Resources	BNP Resources is a Calgary, Alberta, small exploration company, exploring for Helium, in the State of Nevada. Our target area is the Railway Valley (RRV) of Nevada. The mineral leases requested to be removed by NASA, represent 36 sections, or 36 square miles of the Railway Valley. This limits oil, gas and Helium exploration within the RRV area of Nevada.	NASA appreciates your comment. Any withdrawal established would be subject to valid existing rights within the withdrawal area, including existing leases and drilling permits. A discussion of the mineral resources on the subject land area and an analysis of the associated socioeconomic impact of the proposed action is included in Sections 3.2.1.4. and 3.4.2.1 of the EA, respectively.	7/16/2021	Written	
16	b	James	Doody	BNP Resources	The following are three alternatives that can keep these lands as available for leasing & exploration, but still meet the needs of NASA: Option #1 - Set up a checkerboard pattern, where every second section, would be available for NASA use, without any drilling allowed. Exploration would be done from adjacent mineral leases, using horizontal drilling. This allows for mineral exploration on all lands. NASA would be provided with one square mile sections, where there would be no disturbances. Any oil, gas or Helium facilities, would be constructed using low intensity lighting, which would only be utilized when the site is manned. Under normal conditions, the lights would be off. This also benefits the local ecosystem. This philosophy has been used in sensitive areas of Canada, to limit the impact of high intensity lighting, to local amateur astronomers (Village of Greenwood, NS), faced with the expansion, of a local water utility. Option #2 - NASA lands could be arranged in a horizontal strip of land, each one section deep, with drilling accessible from both sides of this land. Again, exploration would be done from adjacent mineral leases, using horizontal drilling. This allows for mineral exploration on all lands. Option #3 - NASA lands could be arranged in a horizontal strip of land, each two sections deep, with drilling accessible from either side. Again, exploration would be done from adjacent mineral leases, using horizontal drilling. This also allows for mineral exploration on all lands. Our recommendation allows NASA to have access to the lands, without high intensity lighting which could result from development. This proposal keeps the RRV open for mineral development. The mineral leases could be issued with these caveats, ensuring that exploration can continue. Access to all lands for 3D Seismic and pipelines, would need to be negotiated with NASA. Similar situations exist when exploring for oil and gas on Canadian military bases; the work needs to be coordinated between both parties.	NASA appreciates your comments and ideas. An explanation of NASA 's requirements for a post-launch vicarious satellite calibration site are provided in Section 1.2 of the EA, with more detail provided in Appendix 1A, Technical Requirements for Earth Observing Satellite Instrument Calibration. NASA has taken your suggested alternatives into consideration; however, they do not meet the purpose and need of the proposed action, which is to preserve the unique surface characteristics of all or nearly all of the land at Railroad Valley to ensure it can continue to be used for Earth observing satellite calibration activities.	7/16/2021	Written	
17	a	Debra	Strickland	Nye County Board of Commissioners	The Nye County Board of County Commissioners is the local government with jurisdictional and planning authority in Railroad Valley, Nye County, Nevada. The Nye County Board of County Commissioners is aware of the Notice of Application for Withdrawal published in the Federal Register on April 29th, 2021 by the Bureau of Land Management. Nye understands the physical characteristics of the Railroad Valley Playa make it a valuable asset for the National Aeronautics and Space Administration for the purpose of calibration of their Orbiting Climate Observatory. Nye County, the situs jurisdiction, would be directly and significantly adversely affected by NASA's proposed land withdrawal. For this reason, Nye County requests the opportunity to discuss this proposal and possible alternatives..... To that end, Nye County requests the opportunity to meet with NASA at its earliest convenience to discuss the concerns of both parties regarding interests in Railroad Valley. We ask that NASA provide more detailed information regarding its concerns about changes to the playa's characteristics. As the affected local government, Nye County looks forward to being a participant in this discussion and hopes to assist in the identification of acceptable alternative sites, or a land management plan that will accommodate multiple land uses that preserve the environment and quality of life for our citizens, while assisting NASA in meeting its mission objectives and goal. Please contact Lorinda A. Wichman, Director of the Nye Natural Resources Office at your earliest at (775) 277-0160 or email lawichman@co.nye.nv.us at your earliest convenience to continue this conversation.	NASA appreciates Nye County's correspondence and continued engagement and understands the County's desire to be involved in the withdrawal application and associated NEPA process.	7/20/2021	Written	

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17	b	Debra	Strickland	Nye County Board of Commissioners	First, Nye County assures NASA there is no "Ongoing Battle" for Railroad Valley (Enclosure 1). Nye County's economic long-term growth has and continues to rely upon use of public lands in accordance with the Mining Act of 1872 and Federal Land Policy Management Act. The Departments of Defense and Energy land withdrawals, in combination with conservation segregations, have disproportionately restricted access to the economic opportunities to over seventeen million acres of public land in Nevada (Nevada Legislative Committee on Public Lands, Enclosure 2). In Nye County, nearly four million acres have been segregated and withdrawn from mineral and land entry since 1926. The public land being considered for withdrawal is currently used for non-renewable energy extraction (oil), and it may host a significant economic lithium resource. Energy extraction and mineral production are two of the most important sectors in Nye County's economy. Proceeds from minerals production provide a significant source of tax revenue, which underscores the importance of the mining sector to Nye's economy. Existing leases for eight operating oil wells on the playa, and placer claims for other resource development would be eliminated or allowed to operate subject to extraordinary mitigation that would surely threaten their economic viability. The socioeconomic and cultural impacts of the various federal agency's land withdrawals are cumulative; in Nye County the impacts include loss of mineral proceeds as well as loss of jobs, payroll taxes, map fees, and other local tax revenues associated with the Congressionally mandated policy of multiple use of public lands. The cumulative impacts threaten our economy and the quality of life of our citizens because the land withdrawals restrict opportunities to access important natural resources of economic value. Nye County would like to support NASA's Orbiting Climate Observatory mission; however, the proposed land withdrawal would have significant adverse impacts on our economy, businesses, and residents. Nye County hopes that NASA will recognize these potential adverse impacts of its proposal and their significance and will work with Nye County to identify alternatives that eliminate these impacts.	NASA appreciates Nye County's comments and understands its concerns about potential impacts of the proposed action on the County's economy and revenue. A discussion of the mineral resource potential of the subject land area and an analysis of the associated socioeconomic impact of the proposed action is included in Sections 3.2.1.4 and 3.4.2.1 of the EA, respectively. Under the proposed action, BLM would retain management and administration of the entire subject land area. Federal payments in lieu of taxes (PILT) to Nye County for the subject land area would therefore be unaffected by the proposed action. In addition, the requested withdrawal would be subject to valid existing rights. Withdrawals do not affect leases or drilling permits, or approved mining plans of operations. Any tax proceeds from mineral production from operating oil or gas wells on the subject land area would therefore also be unaffected by the proposed action. While substantial concentrations of lithium may exist at Railroad Valley, the feasibility of mineral extraction within the withdrawal application area, and thus the potential tax revenues during the withdrawal period, is currently unknown.	7/20/2021	Written	
18	a	Debra	Strickland	Nye County Board of Commissioners	Nye County appreciates the opportunity to participate in the National Environmental Policy Act (NEPA) process and is providing these preliminary scoping comments to the Bureau of Land Management (BLM) as it considers the NASA proposal to withdraw land in Railroad Valley, Nye County, Nevada. As the local government with jurisdiction and planning authority, Nye County requests Cooperating Agency status in the NEPA process. Nye believes that participation as a Cooperating Agency will promote communication with the affected communities and improve BLM and NASA's understanding of the local issues.	NASA appreciates Nye County's continued engagement and understands the County's desire to be involved in the withdrawal application and associated NEPA process. For reasons related to applicable regulatory requirements, NASA declined Nye County's request to be designated as a Cooperating Agency in a letter sent to Nye County on November 18, 2021. NASA has acknowledged Nye County's desire to participate and embraced enhanced communication and coordination with Nye County. NASA remains committed to cooperative engagement, including monthly meetings, with Nye County. NASA has carefully considered and used Nye County's input in several topic areas while preparing the mineral potential report and this EA.	7/20/2021	Written	
18	b	Debra	Strickland	Nye County Board of Commissioners	The proposed withdrawal's stated purpose is to support satellite calibration efforts related to the NASA Orbiting Climate Observatory mission. Nye's comments reflect the conflicts of NASA's proposed withdrawal with existing approved County comprehensive and land use plans, as well as closure to multiple use of these resource-rich lands. To that end, the Nye County Board of County Commissioners does not support the withdrawal of additional land for NASA's proposed purpose (Enclosure 1). The County's issues and concerns, which are within the scope of the proposed land withdrawal and associated EA, are summarized in the comments that follow.	NASA's two Orbiting Climate Observatory (OCO) missions are among several U.S. Earth observing missions that rely on Railroad Valley for satellite instrument calibration. In addition to OCO, NASA relies on the site for calibration of the instruments on its Terra and Aqua satellites and will require Railroad Valley for calibration of its in-development GeoCarb satellite when it launches. All three of USGS' Landsat series of land use and change monitoring satellites and all of NOAA's Joint Polar Satellite System (JPSS) weather satellites also rely on Railroad Valley for satellite calibration, as do many U.S. commercially operated Earth observing satellites. Section 3 includes a discussion of the national socioeconomic and national security benefits of Earth observing satellites such as these.	7/20/2021	Written	
18	c	Debra	Strickland	Nye County Board of Commissioners	[General Comment]-1 Nye County supports the many federal missions of the United States government; however, federal agency land withdrawals affect almost four million acres in Nye County. Loss of economic opportunities on withdrawn lands continue to adversely impact the County and its residents. Nearly 98% of Nye's lands are federally managed or State owned, leaving only 2% of County land in private ownership from which to derive ad valorem tax. Public lands are managed under a Congressionally mandated policy of multiple use to allow for mining, oil and gas development, recreation, and a myriad of other uses, most of which provide economic benefits to local jurisdictions and nearby rural communities. Development and utilization of public lands is a critical component of rural life that sustain long-term economic growth and help ensure future economic security. The closure of public lands to multiple use eliminates some of the County's revenue sources. The losses that would result from the proposed land withdrawal must be quantified, evaluated, and disclosed in the EA. Additionally, necessary measures to minimize and mitigate these impacts must be an integral part of any alternative considered.	NASA appreciates Nye County's correspondence and understands the concerns about potential economic and revenue impacts on the County. A discussion of the mineral resource potential of the subject land area and an analysis of the associated socioeconomic impact of the proposed action is included in Sections 3.2.1.4 and 3.4.2.1 of the EA, respectively. Under the proposed action, BLM would retain management and administration of the entire subject land area. Federal payments in lieu of taxes (PILT) to Nye County for the subject land area would therefore be unaffected by the proposed action. In addition, the requested withdrawal would be subject to valid existing rights. Withdrawals do not affect leases or drilling permits, or approved mining plans of operations. While substantial concentrations of lithium may exist at Railroad Valley, the feasibility of mineral extraction within the withdrawal application area, and thus the potential tax revenues during the withdrawal period, is currently unknown.	7/20/2021	Written	
18	d	Debra	Strickland	Nye County Board of Commissioners	[General Comment]-2 The proposed land withdrawal would both change and restrict established land use in Railroad Valley. The methods for establishing the baseline and range of impacts from federal agency land withdrawal were documented in the 1991 Special Nevada Report (SNR), prepared pursuant to the Military Lands Withdrawal Act of 1989. Methods used in the SNR are both relevant and appropriate and should be used to define and quantify the expected impacts that would occur if the NASA land withdrawal is authorized.	The SNR has been reviewed and incorporated by reference in the EA. The SNR was specifically referred to in crafting the cumulative effects analysis found in Section 3.6	7/20/2021	Written	

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18	e	Debra	Strickland	Nye County Board of Commissioners	[Specific Comment]-1 NASA's proposed withdrawal would remove an additional 5,000+ acres of land in Nye County from multiple use. The direct cumulative impacts resulting from past, present, and reasonably foreseeable land withdrawal actions (Fallon Naval Air Station, Nevada Test and Training Range, and the Nevada National Security Site) on Nye County must include NASA's proposal and be considered, quantified, evaluated, disclosed, and mitigated. The EA must incorporate the enclosed table that summarizes the cumulative impacts resulting from existing and reasonably foreseeable federal withdrawal of lands from multiple use in Nye County (Enclosure 2).	NASA appreciates Nye County's comments and understands its concerns about the cumulative impacts of withdrawals on the County. Cumulative impacts of withdrawals on Nye County are addressed in Section 3.6 of the EA, which incorporates Nye County's enclosed table. NASA's withdrawal request of 22,684 acres would represent less than 0.1% of the total land currently withdrawn in Nye County for the use of other federal agencies like the DoD. In addition, under the proposed action, BLM would retain management and administration of the entire subject land area, and most current uses of the playa, including oil and gas exploration and extraction on existing leases, would continue.	7/20/2021	Written	
18	f	Debra	Strickland	Nye County Board of Commissioners	[Specific Comment]-2 NASA has several existing BLM authorizations outside of the proposed study area. The EA must disclose the expected dispositions of these rights-of-way if the land withdrawal were to be authorized.	Through NASA's Jet Propulsion Laboratory, NASA currently has right-of-way (ROW) N-89562 filed with the BLM Tonopah Field Office, which allows NASA to place minimal ground instruments on a small upper center-left section of the playa for the purposes of characterizing the land surface from the ground. NASA has no existing BLM authorizations outside of the withdrawal application area.	7/20/2021	Written	
18	g	Debra	Strickland	Nye County Board of Commissioners	[Specific Comment]-3 FLPMA establishes multiple-use as the mandated policy for management of public land. The EA must consider an alternative that allows for multiple use of the Railroad Valley playa and accommodates existing and planned uses.	As discussed in Section 2.1 of the EA, the BLM will continue to manage the lands requested for withdrawal under FLPMA's multiple use mandate, which includes management of lands in support of scientific values. In addition, the Secretary of the Interior has the authority to make, modify, extend, or revoke withdrawals of federal land in accordance with FLPMA. The purposes of such withdrawals may include limiting activities on federal land to maintain public values in the area or <u>reserving the land for a particular public purpose or program.</u>	7/20/2021	Written	
18	h	Debra	Strickland	Nye County Board of Commissioners	[Specific Comment]-4 The EA must identify existing and pending water rights and applications in Railroad Valley (Basin 173B) and disclose NASA plans to avoid any federal takings that would result from the land withdrawal.	No water use or other effects on water resources are expected as part of the proposed action. Section 3.3 of the EA includes a brief discussion of the impact of the Proposed Action on water resources.	7/20/2021	Written	
18	i	Debra	Strickland	Nye County Board of Commissioners	[Specific Comment]-5 NASA's withdrawal of public lands would reduce payments in lieu of taxes (PILT). The EA must quantify the amount of PILT that would be lost as a result from the withdrawal and identify NASA's contribution to the cumulative PILT loss.	Under the proposed action, BLM would retain management and administration of the entire subject land area. Federal payments in lieu of taxes (PILT) to Nye County for the subject land area would therefore be unaffected by the Proposed Action.	7/20/2021	Written	
18	j	Debra	Strickland	Nye County Board of Commissioners	[Specific Comment]-6 Executive Order 13817 (83 FR 70265) lists lithium, a vital mineral resource for technology and advancement of clean energy, as one of 35 critical minerals for National Security and economic prosperity. There is currently one active lithium operation in the United States. The Railroad Valley brine field could host one of the largest brine deposits in the United States. The proposed withdrawal would potentially limit access to development of this critical mineral in the foreseeable future. The EA should evaluate the lithium resource potential and include an updated mineral and energy resource assessment of the segregated area.	NASA appreciates Nye County's comments and the importance of lithium. As required by the BLM's regulations, NASA has prepared a mineral potential report, and as stated in Sec. 3.4.2.1 of the EA, NASA's mineral resource assessment found a high likelihood of significant amounts of dissolved lithium and other minerals in subsurface brine below, but not unique to, the withdrawal application area. While substantial concentrations of lithium may exist, the feasibility of mineral extraction within the withdrawal application area is currently unknown.	7/20/2021	Written	
18	k	Debra	Strickland	Nye County Board of Commissioners	[Specific Comment]-7 The Federal Register Notice of Segregation states that NASA evaluated alternative sites for the proposed withdrawal, all of which were found to be unsuitable. The EA must include a discussion of NASA's calibration site requirements necessary to meet mission objectives, the analysis of the alternative sites considered, as well as the reasons for their disqualification. The above comments do not fully encompass the County's concerns. Nye County has requested further details from NASA regarding playa characteristics that make it a desirable vicarious calibration target. The County may provide additional comments as appropriate, as detailed information is obtained. Thank you for considering Nye County's comments.	NASA thanks Nye County for its comments. Section 1.2 of the EA discusses NASA's satellite calibration site requirements as well as an evaluation of alternative sites in detail. Table 1.1 in Section 1.2 lists the alternative sites considered by NASA with information on why each alternative site does not fully meet NASA's needs for satellite calibration or otherwise have the unique characteristics of Railroad Valley. Railroad Valley is the only U.S. location that has all the key characteristics that NASA requires for its satellite calibration activities. Further discussion of these issues can be found in Appendix 1A, Technical Requirements for Earth Observing Satellite Instrument Calibration.	7/20/2021	Written	

BLM Public Comments for NASA's Proposed RRV Withdrawal

Comment Number	Segment Number	First Name	Last Name	Affiliation	Comment	Response	Date Comment Received	Comment Type	Attachments
19		Henry	Gola	Maxar Technologies Inc.	<p>Maxar Technologies Inc. (Maxar) submits these comments on behalf of itself and its subsidiaries in response to the Notice published April 29, 2021, regarding the Bureau of Land Management [LLNV933000.19200000-ET0000.LRORF2012100; TAS XXX; N-98605; MO# 4500146306] Notice of Application of NASA's request for the Secretary of the Interior to reserve lands within the Railroad Valley (RRV), Nye County, Nevada, which are used for satellite calibration activities for a period of 20 years. Maxar is a space technology company with capabilities across a variety of products and services, including remote sensing satellites and geospatial analysis, satellite design and manufacturing, and in-space robotics. Maxar is a world leader in satellite imagery with more than 20 years of experience partnering with the U.S. government, businesses, and more than 50 other governments to map, detect, and predict change across the globe. Fueled largely by Maxar's own constellation of high-resolution imaging satellites, Maxar provides satellite imagery and derived data layers, machine learning, and a rich domain knowledge so organizations can make decisions with confidence. The products we deliver rely have a high radiometric accuracy and the ability to use RRV for absolute radiometric calibration allows Maxar to do so. Maxar is supportive of NASA's request for the Secretary of the Interior to withdraw and reserve lands necessary for satellite calibration activities within the RRV. The RRV is a well characterized calibration site that has been in use for more than 25 years by the international remote sensing community to provide consistent and accurate calibration measurements for both government and commercial assets, including Maxar's own satellites. The RRV Playa is an ideal calibration location, as it is a relatively large, homogenous, and pristine (mostly untouched by human activity) location that can be imaged by space sensors for calibration. Maxar uses RRV for its own vicarious calibration and validation of its Earth observing satellites and has used RRV as a primary site for all its imaging satellites for years. Maxar is set to launch a new, cutting-edge imaging constellation, which will use RRV for calibration and validation of absolute radiometric calibration. The ability to use RRV allows Maxar to deliver imagery products that are accurate, consistent, and ready for use. The loss of the RRV Playa would significantly impact Maxar's calibration program and it would take years to develop a new primary calibration validation site as useful as the RRV Playa. There are more than 500,000 U.S. government employees who rely on Maxar imagery including at NASA, the National Oceanic and Atmospheric Administration (NOAA), National Geospatial Agency (NGA), Federal Emergency Management Agency (FEMA), Bureau of Land Management (BLM), and U.S. National Parks Service. The U.S. Military, Combatant Commands, and the Intelligence Community rely on Maxar's imagery for up to date information. Our imagery is also used in times of disaster to support emergency response including to the COVID-19 pandemic, hurricanes, wildfires, and floods. In addition, as a commercial provider, Maxar sells its imagery and products to companies who utilize satellite imagery to provide services to the general public. Thank you for the opportunity to express Maxar's support of NASA's request to the Secretary of the Interior to withdraw and reserve lands necessary for satellite calibration in RRV. Preserving these lands will continue to allow Maxar to provide critical imagery products to the more than 500,000 U.S. government users.</p>	<p>NASA appreciates Maxar's contributions to and support of the U.S. Earth observing mission from space and agrees with Maxar as to the importance of the Railroad Valley site for the calibration of U.S. commercially operated satellites in addition to government-operated satellites. NASA's Earth observing mission is supported and enhanced through partnerships with U.S. industry.</p>	7/20/2021	Written	
20		Dave	Stevens	Unknown	<p>I object to the NASA withdrawal of land in Nevada. It would remove the land for recreation and mining. There is no reason to remove all this land from public use. NASA could use part of the land already restricted from public use such as the area 51 military base...</p>	<p>Thanks for your comments. The withdrawal application area represents a unique resource for satellite calibration, unavailable anywhere else in the U.S., as detailed in Section 1.2 of the EA. NASA needs the preservation of the land surface characteristics of Railroad Valley to ensure it can continue to be used for satellite calibration activities.</p>	7/23/2021	Written	

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Comment Number	Segment Number	First Name	Last Name	Affiliation	Comment	Response	Date Comment Received	Comment Type	Attachments
21	a	Sidney	Smith	American Exploration & Mining Association	<p>Thank you for the opportunity to provide these comments on the National Aeronautics and Space Administration's (NASA's) request to withdraw and reserve Bureau of Land Management (BLM) lands for satellite calibration activities for a period of 20 years in the Railroad Valley, Nye County, Nevada. Due to a number of concerns about the effects of the withdrawal, the American Exploration & Mining Association (AEMA) opposes NASA's request. Who We Are. AEMA is a 126-year-old, 1,500-member national trade association representing the minerals industry with members residing in 44 U.S. states, 7 Canadian provinces or territories and ten other countries. AEMA is the recognized national voice for exploration, the junior mining sector, and maintaining access to public lands, and represents the entire mining life cycle, from exploration to reclamation and closure. More than 80 percent of our members are small businesses or work for small businesses. As you are likely aware, the Biden administration has made the fight against climate change an urgent priority. A number of technologies have been identified as playing vital roles in moving the United States and the world toward lower or even "net-zero" carbon emissions. Electric vehicles (EVs), solar panels, wind turbines and utility-scale batteries all require large amounts of minerals. Demand for these technologies is rising quickly, and as a result, global mineral demand is skyrocketing too. As noted in a recent report from the International Energy Agency, keeping global temperature rise to below 2 degrees Celsius above preindustrial levels will quadruple the demand by 2040 for the minerals needed to build wind turbines, solar panels and electric vehicles. A faster energy transition — reaching net zero globally by 2050 as the Biden Administration has called for — would require critical mineral inputs to increase sixfold by 2040. Solar panels require silver, tin, copper, and lead; wind turbines use rare earths, copper, aluminum, and zinc; electric vehicles are built with copper, aluminum, iron, molybdenum; and rechargeable storage batteries use lithium, vanadium, nickel, cobalt, and manganese. Approximately 40 percent of the gold now produced is used in electronics and computer chips that are needed for clean energy technologies to meet carbon emission reduction objectives to address climate change. A recent Reuters article noted that President Biden has promised to convert the entire U.S. government fleet — about 640,000 vehicles by 2030 — to EVs. That plan alone could require a 12-fold increase in U.S. lithium production to manufacture the lithium-ion batteries that power EVs, according to Benchmark Minerals Intelligence, as well as increases in output of domestic copper, nickel and cobalt. The magnitude of the minerals needed for a 100 percent EV market is staggering, and simply cannot be ignored. While the United States possesses vast reserves of lithium, very little has been developed to date. Although a great deal of lithium is produced in nations where the United States has positive relationships such as Australia and Chile, even those countries end up shipping the ore to processors in China or elsewhere in Asia. Thus, U.S. auto manufacturers such as Tesla, General Motors and Ford are largely forced to source their lithium from overseas processors and refiners for their battery packs. The Biden administration examined this supply chain bottleneck in its recent report titled "Building Resilient Supply Chains, Revitalizing American Manufacturing, and Fostering Broad-Based Growth" which was the outcome of Executive Order 14017, "America's Supply Chains."</p>	<p>NASA appreciates the comments from the American Exploration & Mining Association. As required by BLM's regulations, NASA has prepared a mineral potential report, and as stated in Sec. 3.4.2.1 of the EA, NASA's mineral resource assessment found a high likelihood of significant amounts of dissolved lithium and other minerals in subsurface brine below, but not unique to the withdrawal application area. While substantial concentrations of lithium may exist, the feasibility of lithium extraction within the withdrawal application area is currently unknown. The withdrawal application area represents a unique resource for satellite calibration, unavailable anywhere else in the U.S., as detailed in Section 1.2 of the EA.</p>	7/23/2021	Written	
21	a (cont.)				<p>In short, America has put itself in a precarious situation by "offshoring" a large part of the mineral supply chain, despite the fact that we could — and should — produce it domestically. NASA's proposed withdrawal would only exacerbate this problem. Nevada's Railroad Valley is home to hundreds of lithium mining claims, which is testament to the potential it holds. This area of Nevada could play a vital role in President Biden's plans to build a resilient supply chain for America's transportation and power generation sectors by providing lithium sourced from American mines, by American miners. In concert with the "Building Resilient Supply Chains" report, the Biden administration created a "National Blueprint for Lithium Batteries." One of the goals of the blueprint is to "Support the growth of a U.S. materials-processing base able to meet domestic battery manufacturing demand." Lithium producers in the Railroad Valley, coupled with downstream processors, would provide American manufacturers with lithium sources closer to production facilities, thus reducing shipping and the overall carbon footprint of the end products. However, NASA's proposed withdrawal would undercut the rest of the Biden administration's climate change efforts, by severely impeding development of a premier lithium resource, right at the time it is needed most.</p>				

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21	b	Sidney	Smith	American Exploration & Mining Association	In addition to the urgent and increasing need, we should not forget what put our country in a situation where a supply chain review is warranted in the first place. Restrictive land management designations threaten mineral supplies. In fact, more than half of all federal lands are currently off limits to mineral entry in the United States. We must weigh this against what we know about the availability of minerals. In a 1999 report, "Hardrock Mining on Federal Lands," the National Research Council noted that "[o]nly a very small portion of Earth's continental crust (less than 0.01%) contains economically viable mineral deposits. Thus, mines can only be located in those few places where economically viable deposits were formed and discovered." When we put BLM lands off-limits, we put our country farther behind in the race to develop EV batteries and renewable supply chains – a race we are already losing. Instead of working to facilitate lithium development in the Railroad Valley, NASA's withdrawal request would have a chilling effect. Mineral withdrawals also hurt struggling rural communities. The median household income in Nye County in 2019 was \$47,300, well below that of Nevada (\$60,365). Mining companies typically pay well above the average salary for the communities where projects are located, because they often employ a very educated and skilled workforce. The average salary of a mine worker in the United States is \$81,000 a year. Those dollars support local communities in the form of paychecks, but also in terms of goods purchased from local mine suppliers; local, state and federal tax revenues; and countless other ways the dollars circulate through the communities. The "Building Resilient Supply Chains" report acknowledges this multiplier effect: "For example, annual domestic mining activities, valued at less than \$100 billion, enable more than \$3 trillion in domestic value-added industry sectors, out of a \$20 trillion economy. This contribution to downstream manufacturing and service sectors is indicative of the derivative value of strategic and critical materials."	As required by the BLM's regulations, NASA has prepared a mineral potential report, and as stated in Sec. 3.4.2.1 of the EA, NASA's mineral resource assessment found a high likelihood of significant amounts of dissolved lithium and other minerals in subsurface brine below, but not unique to, the withdrawal application area. While substantial deposits may exist, the feasibility of mineral extraction within the withdrawal application area is currently unknown. The withdrawal application area also represents a unique resource for satellite calibration, unavailable anywhere else in the U.S., as detailed in Section 1.2 of the EA.	7/23/2021	Written	
21	c	Sidney	Smith	American Exploration & Mining Association	Other options are available. Considering the local, state and national implications of withdrawing an area with such high lithium potential, AEMA recommends that NASA consider a different salt flat for its satellite calibration needs. In early presentations dated October of 2018, (https://trs.jpl.nasa.gov/bitstream/handle/2014/49556/CL%2318-7498.pdf?sequence=1&isAllowed=y) NASA scientists originally argued that they would request a withdrawal of 43,000 acres in Railroad Valley, because mining claims in the area "threaten to disrupt the surface of the Railroad Valley playa, rendering it useless for vicarious calibration." The presentation further stated that this particular playa was the only one "sufficiently homogeneous and undisturbed over a large enough area" in the United States. When the proposal was published in the Federal Register, however, the request shrank, from 43,000 to 22,995 acres. What's more, the notice pointed out that "NASA intends to select from among the segregated lands a subset of those lands most suitable for its purposes; therefore, it is likely that if the Secretary [of Interior] does elect to withdraw any of the lands requested, far fewer of the segregated lands would eventually be withdrawn." The arid West has dozens of salt flats, and an examination of the facts and NASA's own words shows that NASA could go elsewhere. If NASA does not even need to use all of the acreage they have requested in Railroad Valley, then it logically follows that it would be possible to choose from a handful of other salt flats that may be similarly homogeneous but somewhat smaller, without threatening the multimillion-dollar investments of multiple exploration companies, the future of rural communities, and the ability of the country to establish a lithium supply chain.	NASA thanks the American Exploration & Mining Association for its comments and appreciates the acknowledgement of NASA's efforts to limit acreage requested for withdrawal. In 2021, NASA conducted a rigorous peer-reviewed technical analysis of our Earth observing satellite fleet calibration needs and determined NASA requires, at minimum, the entire proposed 22,684-acre withdrawal area due to the large size of one of our satellite's sensor footprints. NASA also expects future needs to support satellites with large sensor footprints into the foreseeable future to meet growing demand for specific kinds of Earth observing data from space. Section 1.2 of the EA discusses NASA's satellite calibration site requirements as well as an evaluation of alternative sites in detail. Further details regarding these issues may be found in Appendix 1A, Technical Requirements for Earth Observing Satellite Instrument Calibration. Railroad Valley is the only U.S. location that has all the key characteristics that NASA requires for its satellite calibration activities.	7/23/2021	Written	https://trs.jpl.nasa.gov/bitstream/handle/2014/49556/CL%2318-7498.pdf?sequence=1&isAllowed=y
21	d	Sidney	Smith	American Exploration & Mining Association	It is also worth noting that the law is very clear. Section 103 of the Federal Land Policy Management Act of 1976 (FLPMA) includes language defining the "principal or major uses" of lands administered by BLM: "The term 'principal or major uses' includes, and is limited to, domestic livestock grazing, fish and wildlife development and utilization, mineral exploration and production, rights-of-way, outdoor recreation, and timber production." Satellite calibration is not a principal or major use, and therefore, NASA should not be allowed to elbow its way to the front of the line.	As discussed in Section 2.1 of the EA, the BLM will continue to manage the lands requested for withdrawal under FLPMA's multiple use mandate, including management of lands in support of scientific values. In addition, the Secretary of the Interior has the authority to make, modify, extend, or revoke withdrawals of federal land in accordance with FLPMA. The purposes of such withdrawals may include limiting activities on federal land to maintain public values in the area or reserving the land for a particular public purpose or program.	7/23/2021	Written	
21	e	Sidney	Smith	American Exploration & Mining Association	Conclusion. Locatable minerals are essential building blocks of our economy, providing the foundation for infrastructure, technology, manufacturing, conventional and renewable energy, electric vehicles and national defense. No modern city, home, factory, computer, telephone, train, car, airplane or national defense system – or satellite – has ever been built or can be built without minerals. While we have great respect for the research activities that NASA conducts and its contributions to humanity, we feel the need to point out the manner in which different agencies of the federal government seem to be working at cross-purposes when it comes to fighting climate change. Officials within the Biden administration express support for the mining industry at times, and acknowledge the role of minerals in the "green energy transition," but those words are soon followed by conflicting actions, such as this withdrawal proposal, the result of which will make our country more dependent on foreign sources of minerals. For these reasons, AEMA urges the BLM to reject NASA's request for a withdrawal in Railroad Valley, Nevada. We appreciate the opportunity to share our thoughts and concerns, and thank you for your consideration.	NASA appreciates the American Exploration & Mining Association's comment. As required by BLM regulations, a mineral resource potential report was prepared as a part of the proposed action, and it includes an assessment of the lithium resource within the subject land area. A discussion of the mineral resource potential of the subject land area and an analysis of the associated socioeconomic impact of the proposed action, including with respect to lithium, is included in Sections 3.2.1.4 and 3.4.2.1 of the EA, respectively.	7/23/2021	Written	

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Comment Number	Segment Number	First Name	Last Name	Affiliation	Comment	Response	Date Comment Received	Comment Type	Attachments
22		Laura	Lindley	West Grant Canyon Development LLC	<p>On behalf of our client, West Grant Canyon Development, LLC (WGCD), we are submitting these comments on the withdrawal application filed by the National Aeronautics and Space Administration (NASA) for nearly 23,000 acres of public lands in the Railroad Valley area. INTEREST OF WGCD. WGCD is the lessee of record of Federal Oil and Gas Lease NVN95552 which covers all of Section 21, Township 7 North, Range 56 East, and lies entirely within the proposed withdrawal area. WGCD also owns Lease NVN96939, which covers Section 28 directly south of Section 21. Although Section 28 is outside the area segregated by NASA's application, it would likely be accessed via the road in Section 21 described below. In addition, WGCD has obtained an approved Application for Permit to Drill (APO) for the Butterfield Fed # 1 well to be drilled in Section 21. The term of that APO has been extended until May 2023. WGCD has constructed a drill pad for that well and made necessary improvements to the existing access road, along with construction of new road to the drill pad, that were completed in late 2019. Drilling operations were not commenced in 2020 due to Covid-19 constraints but operations are expected to commence in late 2021. WGCD's oil and gas lease, and its approved APO, are valid existing rights which cannot be adversely affected by the existing temporary withdrawal. However, WGCD is concerned that a permanent withdrawal could impair, or at least make more expensive, not only operations on its valid existing lease but also on its neighboring lease which would be accessed from the same road. In addition, if the Butterfield Fed #1 well is successful in obtaining production of oil and/or gas in paying quantities, WGCD could seek to lease nearby open federal acreage in the area to allow the maximum economic recovery of the resource identified through the Butterfield Fed #1 well. PROTECTING VALID EXISTING RIGHTS. BLM should consider, as an alternative to the requested withdrawal of all 22,995.05 acres in the withdrawal application, excluding from the withdrawal all of Section 21-T7N, RS6E, as well as the access road to Section 21 which is authorized under existing right-of-way grants N-91244 and N-97203. Doing so would prevent any question about WGCD's rights to access and develop its valid existing lease rights both in Section 21 and in Section 28, which is to the south of the withdrawal area but would be developed by extending the existing access road through Section 21 to Section 28. The Federal Register notice of the withdrawal application that was published on April 29, 2021, states that NASA "intends to select from among the segregated lands a subset of those lands most suitable for its purposes ... " That selected subset should not include Section 21 or the access road to the drill pad in Section 21 and excluding them will prevent disputes as to the extent of WGCD's valid existing rights. The exclusion of the access road should also include a sufficient width to allow any necessary gas or oil pipeline to remove production from the well to be constructed along the route of the road. BLM SHOULD CONSIDER WHETHER OIL AND GAS LEASING CAN CONTINUE WITHOUT UNDUE INTERFERENCE WITH NASA'S NEEDS.</p>	NASA appreciates your comment. The requested withdrawal would be subject to valid existing rights within the withdrawal area. Withdrawals do not affect leases or drilling permits, or approved mining plans of operations. A discussion of the mineral resource potential of the subject land area and an analysis of the associated socioeconomic impact of the proposed action is included in Sections 3.2.1.4. and 3.4.2.1 of the EA, respectively.	7/27/2021	Written	
22 (cont.)					<p>As mentioned above, depending on the results of the drilling and completion of the Butterfield Field #1 well, it may be prudent for the U.S. to lease the currently open acreage in Township 7 North, Range 56 East that has been segregated by the withdrawal application. If the drilling results indicate the existence of a resource that extends to the neighboring lands in that township, then the BLM should evaluate whether those lands can be developed for oil and gas production purposes without interfering with NASA's use of the area. Given the current technology for directional and horizontal drilling, surface disturbance for exploration and production infrastructure can be minimized. There is therefore no need to entirely withdraw the requested lands in Township 7 North, Range 56 East from oil and gas leasing so an alternative which would withdraw the lands in that township from the operation of the public land laws EXCEPT the oil and gas leasing provisions of the Mineral Leasing Act of 1920 should be considered. WGCD looks forward to reviewing and commenting on the NEPA analysis that is to be prepared on the proposed withdrawal. In the meantime, please let us know if we can provide any further information during your consideration of NASA's application.</p>				

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Comment Number	Segment Number	First Name	Last Name	Affiliation	Comment	Response	Date Comment Received	Comment Type	Attachments
23		Mark	Mozena	Planet Labs Inc	<p>With regards to the Railroad Valley Site, Planet would like to voice its support of NASA to continue to protect and preserve this site. We oppose changes to this critical and unique national asset. This site is essential to Planet and other national and commercial Earth observing satellite systems to maintain radiometric calibration and ensure that our imagery is accurate for our commercial, civil, and national security users. Planet is the largest Earth imaging satellite company in the world. Based in San Francisco, we have been imaging the entire landmass of the world every day for the past 5 years. This data is licensed to a wide variety of commercial and government customers. 70% of our business is on the commercial side where we provide daily imagery to customers across many sectors including agriculture, energy and land management, emergency management, infrastructure, insurance, finance, security, scientific research and education. We also provide data to government customers including Earth Scientists and researchers across the U.S. Government and the intelligence and defense community. Our imagery enables governments, agencies, communities, companies, and individuals to make better data driven decisions. Critical to our ability to provide accurate imagery and data to our customers is our ability to calibrate our fleet of 100s of satellites. The Railroad Valley site is essential in this process and is used as both a pseudo invariant calibration site as well as leveraging the data that the RadCalNet station on the site produces. Railroad Valley is a unique and critical site that enables Planet and other Earth imaging assets to calibrate and maintain effectiveness as a provider of remote sensing data for the world. Planet started radiometric calibration of our Dove satellites in 2016 with two initial test satellites. Since then, we have individually calibrated over 250 satellites. Radiometric calibration is how we can convert measurements from our satellites to a physical unit of energy. This allows the data from our satellites to be easier to use and comparable with other satellites. For the process of radiometric calibration, we are reliant on well-characterized and stable sites that do not change over the years, generally called a pseudo invariant calibration site. This stability allows us to isolate changes in our satellites over time. The fact that Railroad Valley has been studied and characterized for over thirty years means that we can take into account differences between satellite instruments for the purposes of our calibration. This is key in allowing us to leverage public missions that have advanced on-board calibration capabilities and transfer their calibration to our satellites. Our satellites have a wide variety of instruments on them, so this aspect is also important when comparing different Planet satellites (Figure 1). Railroad Valley's use from the very first calibrated Dove to the latest Superdove allows us to provide a continuity of metrics. Any alteration of the site would degrade our ability to provide accurate radiometry and break this link from our very first calibrated satellites to our current and future satellites. The Railroad Valley Site is also used by the reference missions, like Landsat 8, Sentinel-2 and other programs, and is critical to allow for data fusion work in science and industry across data sources. Figure 1 - Showing the different spectral bands for the satellites that Planet currently operates; Figure 2 - The calibration sites that Planet uses across the world. Planet uses a set of 27 calibration sites across the world (Figure 2). All these sites are important to our calibration process, but Railroad Valley is the only one in the USA that is easily accessible.</p>	NASA appreciates Planet Labs Inc.'s contributions to and support of the U.S. Earth observing mission from space, and agrees on how important the Railroad Valley site is for the calibration of U.S. commercially operated satellites in addition to government-operated satellites. NASA's Earth observing mission is supported and enhanced through partnerships with U.S. industry.	7/28/2021	Written	
23 (cont.)					<p>Figure 3 shows the amount of data for each calibration site as a proportion of the total calibration data for our newest satellites (Block 3 Skysats) launched one year ago and shows how significant the Railroad Valley site plays in the calibration of these satellites. Figure 3 - The calibration data for Skysat Block 3 satellites separated by calibration site. Railroad Valley also has a RadCalNet station on the site. This provides an automated source of ground measurements, which can act as a source of truth to validate our measurements. The fact that RadCalNet is an open and widely used data source means that it is a great tool to create publicly understandable and verifiable accuracy estimates. Railroad Valley is only one of four RadCalNet sites in the entire world. Figure 4 shows the proportion of RadCalNet data from one of our Superdove flocks (Flock 4p that was launched in November 2019 and consists of 12 Superdoves) that comes from Railroad Valley. Figure 4 - The amount of RadCalNet data for Flock 4p Superdove satellites, split by site, that is used for public validation estimates. Calibrated data is of utmost importance for scientific research. It allows data across disparate satellites to be used together, such as Planet's Doves and NASA/USGS Landsat data, creating a cohesive network of information. Calibration is also critical for any reliable quantitative analysis of the data because it allows real changes on the surface of the Earth to be distinguished from variations in imaging conditions on the ground, in the atmosphere, and onboard the satellite. Accurately monitoring change on Earth cannot be accomplished without well-calibrated data. We urge you to realize the unique and critical role this site plays for remote sensing and Earth imagery, and we hope you will continue to protect this site. Truly, Railroad Valley is a unique national resource and is critical to maintain accurate measurements of our world. As our nation becomes ever more impacted by an evolving and changing environment, it is critical to have reliable and accurate data and imagery of our planet. This Railroad Valley site is a true national asset, and it is critical to ensuring that scientific and operational data remains accurate and impactful and enables communities to make better data-driven decisions.</p>				

BLM Public Comments for NASA's Proposed RRV Withdrawal

Comment Number	Segment Number	First Name	Last Name	Affiliation	Comment	Response	Date Comment Received	Comment Type	Attachments
24		Karen	Beyers	Unknown	I am late a day commenting; unexpected hours of cleanup after severe flash flooding at my workplace in Pahrump. Thank you for being part of this month's exciting progress in Homeland Ecosystem Security. I gladly turn my attention to your decisions, during a hold in volunteering (with state and federal) projects, concerning recovery of desert tortoise-dependent, natural Nevada wilderness. Good Old NASA - initiating the wildlands "withdrawals", to ensure specific satellite management & safety requirements - and simultaneously benefiting irreplaceable natural desert "biological refuge" spaces: Until now, those spaces, largely indefensible, open to many kinds of long-term resource disruption and extraction, through 1976 FLPMA. Recently, through our Legislature, a crack driven, and best/worst parts (depending on source of income) were chipped off of the 1872 Law. Never would have bet on that happening. Attention was diverted ? to seafloor... Hurray! for the Citizens' Cyber Security Reserve Act! Highly-skilled workers advancing in their scientific & technology careers, or returning to their chosen work, after retiring from business/military. And they need clear dark skies, the kind over the wildlands, to do what they do for us. And more mention of a real Citizens' Climate Corps. Chosen life's work, plenty to do, not highly paid, but deeply satisfying. For those of us who didn't know we were "climate", just trying to hold back bigger & bigger firelines and floods. Used to be, \$8.00/hr, + death benefits. Now, can afford to return, (yes, in shape) - a large, old, experienced, and still able & willing force. Three intrepid scientists, whose current research may help make an International Dark Skies Preserve in the Mojave Trails Monument. That may become the model for legally preserving lands for observatories and sanctuaries, on land and sea, to the great benefit, inadvertently, of nonstar, wildlife and plantlife. Heretofore, non- or why fundable biodiversity. Many decades after almost losing Mojave Desert tortoises and their system, to indifferent, even calculated destruction - Maybe ? we have progress: No more unnecessary motor noise, vibration, fouled atmosphere, invasion of plant species leading to unsurvivable wildfire; no industrial pollution, disruptive lighting, ground-scraping machinery, invasion by non-native subsidized predatory species, assorted dumping, watergrabbing and outright attempts to blow up everything into radioactive dust. ? I appreciate hearing about change that I have been waiting for, through many generations of political FizBin, self-aggrandizing "Bought Law" and self-glorifying "free enterprise".	NASA appreciates your comments and support. The purpose of NASA's requested withdrawal is to preserve the surface land characteristics of the Railroad Valley playa to ensure it can continue to be used for satellite calibration activities.	7/28/2021	Written	
25		Patrick	Donnelly	Center for Biological Diversity	The Center for Biological Diversity supports the proposed withdrawal of lands in Railroad Valley for NASA's use.	NASA appreciates the Center for Biological Diversity's support.	7/28/2021	Written	
26		Bradford	Hardenbrook	Nevada Department of Wildlife	The Nevada Department of Wildlife (NDOW) thanks you for this input opportunity. We understand the purpose of NASA's application is for a 20-year withdrawal of approximately 22,955 acres in Railroad Valley for use in performing necessary satellite calibration activities. The notice would segregate the lands for up to two years from all forms of appropriation or other disposition while the withdrawal package is being processed. Our preliminary comments are detailed below. The withdrawal area is approximately 1.4 miles from the Railroad Valley Wildlife Management Area (WMA) and 5.5 miles from the NDOW Lockes Ranch property. The Lockes Ranch property is managed in conjunction with the adjacent Railroad Valley WMA which is under a joint NDOW/BLM management agreement. These areas contain significant habitat values for a suite of rare, native aquatic species dependent on naturally occurring thermal springs and resultant wetlands. Among the species is the Railroad Valley Springfish (Crenichthys Nevada), a State protected species classified as threatened and which is listed as threatened under the federal Endangered Species Act. Additional to aquatic species, the area supports a host of BLM – Nevada sensitive birds and small mammals. Our current understanding of NASA's satellite calibration activities suggests the proposed land withdrawal is likely compatible with NDOW's wildlife management objectives in Railroad Valley. We look forward to further opportunities in coordinating with the BLM and participating in NEPA development. Thank you again for this opportunity to provide input. For additional assistance and coordination please contact Habitat Biologist Tracy Kipke by e-mail at tkipke@ndow.org.	NASA appreciates the input on listed species from the Nevada Department of Wildlife. Your input was incorporated into Section 3.1.1.3 of the EA on special status species. The requested withdrawal would have no adverse effect on biological resources, including sensitive species and their habitats.	7/29/2021	Written	
27		Jonathan	Boarini	Unknown	I am writing to comment on my opposition to the National Aeronautics and Space Administration's application for withdrawal of 22,995 acres for use on satellite calibration activities because such expanded presence on such a large portion of land threatens to undermine the ecological and natural state of Nevada's public lands through the introduction of development and pollution.	NASA's proposed action would not expand the human presence or built environment in RRV and likewise would not introduce any new development or pollution.	7/29/2021	Written	

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28		Richard	Howe	White Pine County Board of Commissioners	White Pine County, Nevada (County) would like to express its opposition to both the two-year segregation and the proposed 20-year segregation of 22,995.05 acres of public lands in Railroad Valley, Nye County, Nevada from all forms of appropriation or other disposition under public land laws. Furthermore, the County supports Nye County Resolution No. 2021-20 A, Resolution Opposing the Segregation of Public Lands in Railroad Valley, Nye County, by the National Aeronautics and Space Administration. While the proposed project is not located within White Pine County, it is located in close proximity and there is a direct socio-economic nexus given that most employees who work in Railroad Valley live or stay in White Pine County and the City of Ely given its close proximity. While the County understands the importance of NASA's mission, it is difficult to believe that such calibration activities cannot be conducted in a manner that also allows for future economic development in the area, namely development of fluid mineral and locatable mineral resources. Before proposing the withdrawal, temporary or long-term, NASA should have worked with existing mineral claimants and project proponents to exhaust all options for co-location of such projects. If there is a simply no way to co-locate NASA's calibration program with current and foreseeable projects, then NASA should explore all options to relocate is calibration program. The proposed action is inconsistent with the County's adopted Public Lands Policy Plan, Policy 2-1, which states support for the concept of Multiple Use Management as an overriding philosophy for management of the public lands based on multiple use and sustainable yield concepts, and in a way that will conserve natural resources. The proposed project does not support the concept of multiple use and will result in current and future economic harms to White Pine County. Any National Environmental Policy Act analysis needs to analyze these impacts and develop a suite of alternatives for either co-location of foreseeable projects with NASA's calibration program or a full relocation of NASA's calibration program.	NASA thanks White Pine County for its comments. The proposed land withdrawal area in Nye County represents a unique national resource for satellite calibration, unavailable anywhere else in the U.S., as detailed in Section 1.2 of the EA. As discussed in Section 2.1 of the EA, the BLM will continue to manage the lands requested for withdrawal under the Federal Land Policy and Management Act's (FLPMA) multiple use mandate, which includes management of lands in support of scientific values in addition to mineral values. The Secretary of the Interior has the authority to make, modify, extend, or revoke withdrawals of federal land in accordance with FLPMA. The purposes of such withdrawals may include limiting activities on federal land to maintain public values in the area or reserving the land for a particular public purpose or program.	8/2/2021	Written	
29	a	Alan	Biaggi	Nevada Mining Association	Good morning and thank you. You pronounced it just right, I appreciate that. As you indicated, my name is Alan Biaggi and I am with the Nevada Mining Association. And just a little background, the Nevada Mining Association has been in existence for well over a century and represents its members in state, federal, and local policy matters, public relations, and workforce and community support. Nevada Mining has a diverse membership of almost 500 individuals and companies who include mine operators, explorers, and vendors who serve the industry. So, to begin, the Nevada Mining Association recognizes the difficult task the BLM faces in managing public lands for multiple use. Mineral exploration developments are crucial parts of BLM's multiple-use mandate, and the agency must ensure that they are not unreasonably limited. To that end, the Federal Land Policy Management Act requires the BLM to foster and develop mineral activities, not stifle and prohibit such development. This withdrawal is inconsistent with that mandate.	Thank you for your comments. As discussed in Section 2.1 of the EA, the BLM will continue to manage the lands requested for withdrawal under the Federal Land Policy and Management Act's (FLPMA) multiple use mandate, which includes management of lands in support of scientific values in addition to mineral values. The Secretary of the Interior has the authority to make, modify, extend, or revoke withdrawals of federal land in accordance with FLPMA. The purposes of such withdrawals may include limiting activities on federal land to maintain public values in the area or reserving the land for a particular public purpose or program.	7/19/2021	Verbal	
29	b	Alan	Biaggi	Nevada Mining Association	Second, the U.S.'s dependence on foreign sources of minerals has doubled over the past two decades and is currently at a record high. The proposed withdrawal area contains significant lithium resources which are vital to resolving America's natural resource issues related to climate change and energy production and storage. The nation's future is short changed when domestic natural resources are removed from exploration and development. The Nevada Mining Association contends that BLM's proposed actions, in both the short term and for the 20-year withdrawal, are inconsistent and in conflict with the language of FLPMA. Third, the withdrawal removes vast tracts of lands that have significant potential for economic development. There are no concurrent social or economic benefits to the state or to rural communities for NASA's satellite calibration operations. In fact, Nevadans had no idea Railroad Valley was being used in this manner. The potential economic impacts and the loss of exploration and mining obviously outweigh the negligible economic impacts of the NASA calibration system.	Section 3.4.2.1 of the EA includes an analysis of the socioeconomic impact of the requested withdrawal, including with respect to mining. NASA does not agree with the comment that the State of Nevada and rural communities do not receive social and economic benefits from NASA's satellite calibration operations. The entire nation benefits from the U.S. investment in the nation's Earth observing satellite fleet, which provides the unique vantage point of space for monitoring of drought, wildfires, water resources, land use, weather, etc. Nevada decision makers regularly rely on NASA Earth observations for key public and private services, including drought monitoring; water supply monitoring and management; wildfire and smoke situational awareness, response, and recovery; harmful algal bloom tracking; and soil moisture tracking for agriculture; as well as weather forecasting and monitoring.	7/19/2021	Verbal	
29	c	Alan	Biaggi	Nevada Mining Association	Fourth, as noted in the opening statement by BLM, the proposed action withdrawals are subject to valid and existing rights. On its face, this appears to be a reasonable concession, however the term "valid and existing right" is not defined in federal or state regulations. Due to the lack of a concise definition, it is not possible to estimate the impacts and costs associated with the withdrawal as it related to exploration in mineral activities. Furthermore, [unintelligible: VERS?] must be conducted by federal agencies. It's a time consuming process and only a handful of examiners are employed by the federal agencies and those numbers of staff are dwindling. Consequently, this places a de facto prohibition in further claim development or mining activities.	Section 2.1 of the EA discusses what constitutes a valid existing right on federal lands, including in the subject land area. Because the validity of any existing mining claims in the requested withdrawal area is outside the scope of this analysis, NASA's discussion of potential environmental impacts related to mining is necessarily qualitative in character and general in scope. The BLM will continue to manage the lands requested for withdrawal under FLPMA's multiple use mandate, which may include management of lands in support of scientific values as well as mineral values. In addition, the Secretary of the Interior has the authority to make, modify, extend, or revoke withdrawals of federal land in accordance with FLPMA. The purposes of such withdrawals may include limiting activities on federal land to maintain public values in the area or reserving the land for a particular public purpose or program.	7/19/2021	Verbal	

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29	d	Alan	Biaggi	Nevada Mining Association	Fifth, for many years, the state of Nevada has been subject to numerous land withdrawals limiting exploration, mining, and recreation, and other uses. These have come in many forms, from military withdrawals, nuclear testing and storage, wildlife habitat protection, wilderness, and national security issues, to name a few. Each time a withdrawal occurs, more of the nation and state's mineral resources are removed from evaluation and extraction and negative impacts result. Federal land managers must rein in these single-interest withdrawals and take a critical look at how to best serve the citizens of the state and nation. Past experience tells us that, once withdrawn, lands will never be restored to multiple use. Finally, the Great Basin which covers much of Nevada contains innumerable undisturbed playas. The Nevada Mining Association questions the statements made by Mr. David Crisp of the Jet Propulsion Laboratory in 2018 that there are no sufficiently large, homogenous, undisturbed lands over an area large enough to enable calibration of large footprint instruments. We call upon the BLM and NASA to provide evidence of the unique conditions of the Railroad Valley playa and why there are not suitable alternatives in the western U.S. Again, thank you for allowing me to provide comments and we also provided written comments dated June 21, 2021.	The FLMPA allows for land withdrawals for up to a 20-year period, and NASA is applying for a 20-year withdrawal. The effects of a long-term withdrawal of the subject area are appropriately considered throughout the EA. Section 1.2 of the EA discusses NASA's satellite calibration site requirements as well as an evaluation of alternative sites in detail. Table 1.1 in Section 1.2 lists the alternative sites considered by NASA with information on why each alternative site does not fully meet NASA's needs for satellite calibration or otherwise have the unique characteristics of Railroad Valley. Railroad Valley is the only U.S. location that has all the key characteristics that NASA requires for its satellite calibration activities.	7/19/2021	Verbal	
30		Arin	Jumpasut	Planet Labs Inc	Thank you for that. My name is Arin Jumpasut. I lead the radiometric calibration of the Planet satellites. Planet is the largest Earth imaging company in the world. Based in San Francisco, we have been imaging the entire land mass of the world every day for the past 5 years. This data is sold to a wide variety of commercial and government customers. Seventy percent of our business is on the commercial side where we provide daily imagery to customers across many sectors, including agriculture, energy and land management, emergency management, infrastructure, insurance, finance, security, scientific research, and education. We also provide data to government customers, including Earth scientists and researchers across the U.S. government and intelligence and defense community. Our imagery enables government agencies, communities, companies, and individuals to make better data-driven decisions. Critical to our ability to provide accurate imagery and data to our customers is our ability to calibrate our fleet of hundreds of satellites. We support NASA and oppose destruction of any part of this site. We have been calibrating our satellites since 2016 and have individually calibrated over 250 satellites to date. Railroad Valley has been essential to calibrating every single one of those satellites. The Railroad Valley site is one of only a handful of suitable calibration sites across the globe and the only one located in the USA. Any alteration of the site would degrade our ability to provide accurate radiometry and break this link from our very first calibrated satellites to our current and future satellites. The Railroad Valley site is also used by the reference missions, as well, like Landsat 8 and Sentinel-2 and other programs. It is critical to allow for data fusion work in science and industry across data sources. We urge you to realize the unique and critical role this site plays in remote sensing and Earth imagery. We hope you continue to protect this site as our nation becomes ever more impacted by an evolving and changing environment. It is critical to have reliable and accurate data and imagery of our planet. This Railroad Valley site is a true national asset and it is critical in ensuring that scientific and operational data remains accurate and impactful and enables communities to make better data driven decisions. Thank you for your time and we will submit written notes, as well, in the future.	NASA appreciates your comments and Planet's contributions to and support of the U.S. Earth observing mission from space. NASA agrees on how important the Railroad Valley site is for the calibration of U.S. commercially operated satellites in addition to government-operated satellites. NASA's Earth observing mission is supported and enhanced through partnerships with U.S. industry.	7/19/2021	Verbal	
31		Brandon	Russell (Dr.)	LabSphere	Thank you very much. I am Dr. Brandon Russell of Labsphere, Inc. in New Hampshire. The area specified is of critical importance to government, scientific, and commercial Earth observation. Railroad Valley is a uniquely suitable location type that exists almost nowhere else and must be kept in a pristine state to be of utility. The area under suggested withdrawal is only a small fraction of the playa and will not substantially reduce extraction activities despite earlier claims. The location is of primary use in ensuring the accuracy of satellite data from NASA, NOAA, USGS, and commercial companies, including Planet Labs (as we just heard), Maxar, and a number of other small satellite operators in the United States and globally. Data from this site provides direct economic value and underpins measurements necessary for weather forecasting, climate and environmental science and management, disaster response, agriculture, and natural resources management and extraction, as well as national security, intelligence, and defense operation. The activities of the companies, including Planet, Maxar, and soon Labsphere, provide direct economic benefit, not only to the United States through their satellite activities but also for the state of Nevada, through the activities of individuals going there performing campaigns, engineering, environmental surveys, and others. I support NASA's proposed withdrawal in both my personal life and in my professional capacity as an Earth observation remote sensing scientist. I work directly with satellite data calibrated by NASA at Railroad Valley. And I also have submitted these comments in writing. Thank you very much.	NASA appreciates your support of the U.S. Earth observing mission from space, and agrees with your comments on the importance of Railroad Valley for the calibration of commercially operated and government-operated Earth observing satellites. The entire nation benefits from the U.S. investment in the nation's Earth observing satellite fleet, which provides the unique vantage point of space for monitoring of drought, wildfires, water resources, land use, weather, etc.	7/19/2021	Verbal	

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32		Vincent	Ramirez	3PL Operating Co	I'm Vincent Ramirez, I am the CEO of 3PL Operating, and we are a lithium mining company, probably most directly affected by this withdrawal. And, I guess, we have a lot in common with NASA because we originally got involved in this with global climate change. We have a 3.5-million-year record with our drilling activity that directly bears upon this. But I would like to first introduce who we are and claim why we're different, because I believe we've been a little mischaracterized. We drilled the Discovery Well in 2017 and the size of our lithium, boron, tungsten, and other metals discovered is possibly one of the largest deposits in the world. That said, we really have no intention of evaporation ponds or other large disturbances of the surface. For us, it's much more strategic to move our activities closer to the road, which is out of the playa. And so, we would hope that we can cooperate in a way that we could have a few wells within the segregated area and then move our product out of the area. So, I think there is a great effort to cooperate here. It's not precisely clear to us what NASA wants to do. We understand the vital importance of this and we don't want to disturb the ground, but we are interested in our mining activity and, as I've said, it's extremely valuable on a national level. As we all know, satellite calibration and global studies are important; however, so is lithium mining. It's part of the national interest. It's been identified in a presidential executive order. And it's not just lithium; there are other strategic minerals. So, we hope to be a green company and really set the stage for how other companies can behave. So, we think there's a lot of cooperation that we can have with NASA. We would call it a public/private partnership. And I really hope I can have some dialogue with the scientists at NASA at some time. We're in the phone book; you can call me, and you'll see that we are geologists and scientists also. And we really share a lot in common. Of course, you don't want us to disturb the ground; we don't want to disturb the ground. But I think that's easily accommodated once we get into the details. Thank you very much.	NASA appreciates 3PL's comments and acknowledges there is a high potential for the presence of lithium at Railroad Valley. As required by BLM's regulations, NASA has prepared a mineral potential report, and as stated in Sec. 3.4.2.1 of the EA, NASA's mineral resource assessment found a high likelihood of significant amounts of dissolved lithium and other minerals in subsurface brine below, but not unique to the withdrawal application area. While substantial concentrations of lithium may exist, the feasibility of lithium extraction within the withdrawal application area is currently unknown. The withdrawal application area represents a unique resource for satellite calibration, unavailable anywhere else in the U.S., as detailed in Section 1.2 of the EA. NASA needs the preservation of the land surface characteristics of Railroad Valley to ensure it can continue to be used for satellite calibration activities.	7/19/2021	Verbal	
33		Michael	O'Neal	Grant Canyon Oil and Gas LLC	Michael O'Neal with Grant Canyon Oil and Gas. We're an oil and gas operator; we've operated in Nevada for 16 years. We operate five fields and one of the fields that we operate, called Sand Springs, falls within this acreage. We've operated that field for 14 years and we have valid existing rights under lease NVN47646, which covers 3,680 acres. Sand Springs was discovered in 1993, and it appears that NASA started its satellite calibration work in 1993. So, we have coexisted together for 28 years: it seems to me like we could continue that. As you stated, you're worried about the surface. Our work is done below the surface of the ground. We have projects out here that are enhanced oil recovery projects. We have established enhanced oil recovery operations and proven them to be beneficial and successful for the United States and Nevada. We've done this with three of the fields that we own in Nevada and Sand Springs is another field. Sand Springs currently produces...In your report, you state – the Railroad Valley report – that the oil industry has explored Railroad Valley since the 1980s, but it's your understanding that the wells have been abandoned on the playa due to low yield. That's incorrect: we still produce in the playa. It's important to understand that, in Railroad Valley to date, 48 million barrels of oil have been produced from this valley, generating 250 million (a quarter of a billion) dollars in revenue for the United States. And we've taken these fields and are continuing to get more oil out of them. We believe there's another 750 thousand barrels of oil to come out of just Sand Springs, and that doesn't include the additional drilling and development and what could be developed with that drilling. I appreciate the time this morning. We put in a letter with our opposition to the proposed land withdrawal, dated July 8, 2021. Once again, I would like to say we do have valid and existing rights; we've co-existed and I don't see any reason why we couldn't continue to co-exist out there. We haven't seemed to create a problem for you at this point. So, thank you very much for the time this morning.	NASA appreciates your comment. A discussion of the mineral resource potential of the subject land area and an analysis of the associated socioeconomic impact of the proposed action is included in Sections 3.2.1.4. and 3.4.2.1 of the EA, respectively. The requested withdrawal would be subject to valid existing rights within the withdrawal area, including existing leases and drilling permits.	7/19/2021	Verbal	
34		Matt	Dusenbury	Private land development consultant in Nevada	Thank you very much Jeremy. It's not often I get to hear my name perfectly pronounced like that. Thank you very much, Jeremy. My name is Matt Dusenbury. I am a private land development consultant in Nevada and I stand in opposition to this withdrawal. I'd like to just present a few short facts. Number one, private land activity in Nye County, Nevada generates about 90 cents per acre, in terms of income for the county; whereas, federal activity, including the NASA withdrawal, generates about 7 cents per acre, in terms of income for the county. The withdrawal of this land, from the county perspective, would represent significant reduction in potential income for the area. Also the nature of the withdrawal, preventing the placement of mining claims or other leasable activity in the area, represents a significant restriction to access for the area. And there was an earlier claim that potential for extraction would not be reduced by this withdrawal action. I feel that that claim should be scrutinized carefully because, without the access or the right to develop those resources, the ability to perform that extraction is, indeed, significantly reduced. Thank you very much for the opportunity to comment here this morning.	NASA appreciates your comments. A discussion of the mineral resource potential of the subject land area and an analysis of the associated socioeconomic impact of the proposed action is included in Sections 3.2.1.4 and 3.4.2.1 of the EA, respectively. Under the proposed action, BLM would retain management and administration of the entire subject land area. Federal payments in lieu of taxes (PILT) to Nye County for the subject land area would therefore be unaffected by the proposed action. In addition, the requested withdrawal would be subject to valid existing rights. Withdrawals do not affect leases or drilling permits, or approved mining plans of operations. Any tax proceeds from mineral production from operating oil or gas wells on the subject land area would therefore also be unaffected by the proposed action. While substantial concentrations of lithium may exist at Railroad Valley, the feasibility of mineral extraction within the withdrawal application area, and thus the potential tax revenues during the withdrawal period, is currently unknown.	7/19/2021	Verbal	

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35		William	Osborn	Geothermal Solutions, Inc.	Thanks Jeremy. My name's William Osborn, I'm the CEO of Geothermal Solutions, Inc. and I'm an aqueous geochemist. And I have several decades of experience in brine production in saline lake chemistry. I think it's notable that the operator of Sand Springs noted that they've operated together with NASA on the playa for several decades. And the production of brine from the playa would essentially be no different than what the oil and gas operations are doing. So, seems to me it would be compatible with their operations. Thank you.	NASA appreciates your comments. As required by BLM's regulations, NASA has prepared a mineral potential report, and as stated in Sec. 3.4.2.1 of the EA, NASA's mineral resource assessment found a high likelihood of significant amounts of dissolved lithium and other minerals in subsurface brine below, but not unique to the withdrawal application area. While substantial concentrations of lithium may exist, the feasibility of lithium extraction within the withdrawal application area is currently unknown. The withdrawal application area represents a unique resource for satellite calibration, unavailable anywhere else in the U.S., as detailed in Section 1.2 of the EA. NASA needs the preservation of the land surface characteristics of Railroad Valley to ensure it can continue to be used for satellite calibration activities.	7/19/2021	Verbal	
36		Mark	Helmlinger	N/A	Mark Helmlinger. Thank you. I've been to the BotAsh production facility on Sua Pan in African which is a brine extraction mining operation. They pull out the brine and they put it in large evaporation ponds in order to concentrate the liquor before they add carbon dioxide to make their product, which is shipped out on rail. Those wells that are out on the playa are...have pads similar to oil extraction, however, there's also a large pipeline that runs from those wells. It is water in a considerable volume that is run back to settlement ponds and the plant. So, the way they've limited their economic model was to have those pipelines up on the surface. For the oil extraction at Railroad Valley, and I've been there many times, however they get the oil from the drilling pads that are on the smooth, homogeneous parts, or adjacent to the smooth, homogeneous parts of the playa – keep in mind there's many parts of the playa that have got sand dunes and random vegetation and are not particularly useful for NASA's purposes – but those extraction pads don't seem to have visible pipelines back to...or if there are, and I've seen insulation-coated pipelines (evidently the oil comes out warm and they want to keep it that way, so that it'll flow), but that's in other parts of the playa and that's part of that compatibility [unintelligible]. The compatibility that's in existence. And that's been my experience and I can comment further if anybody has any questions.	NASA appreciates your comments on Railroad Valley. The proposed land withdrawal area in Railroad Valley represents a unique resource for satellite calibration, unavailable anywhere else in the U.S., as detailed in Section 1.2 of the EA.	7/19/2021	Verbal	
37		Mark	Unknown	3PL Operating Co	Hi Jeremy, Mark [unintelligible: Zupkus?], I'm with 3PL. I think it's important to note that we would be using an existing infrastructure on the playa and that we would not be using evaporation ponds, we would use a direct extraction process and that would take up a lot less space. We could move that off the segregated land, and I think we would be able to work with NASA, not only on our infrastructure, but also with regard to NEPA and other on-surface functions that we could share with. So, when we talk about making a disturbance in the playa, I think what's there with the oil operations, we're not really going to substantially change that footprint. And NASA needs to understand that. Thank you very much.	NASA appreciates your comments. As required by BLM's regulations, NASA has prepared a mineral potential report, and as stated in Sec. 3.4.2.1 of the EA, NASA's mineral resource assessment found a high likelihood of significant amounts of dissolved lithium and other minerals in subsurface brine below, but not unique to the withdrawal application area. While substantial concentrations of lithium may exist, the feasibility of lithium extraction within the withdrawal application area is currently unknown. The withdrawal application area represents a unique resource for satellite calibration, unavailable anywhere else in the U.S., as detailed in Section 1.2 of the EA. NASA needs the preservation of the land surface characteristics of Railroad Valley to ensure it can continue to be used for satellite calibration activities.	7/19/2021	Verbal	
38	a	Jake	Tibbitts	State Land Use Planning Advisory Council	Dear Director Brown: On behalf of the Nevada State Land Use Planning Advisory Council (SLUPAC) I am writing to comment on the National Aeronautics and Space Administration's (NASA) request to withdraw public lands in Nevada's Railroad Valley. The proposed withdrawal is to support satellite calibration efforts related to the NASA Orbiting Climate Observatory mission. SLUPAC supports NASA's mission and is proud of Nevada's role over the past several decades to support the nation's satellite calibration efforts. However, SLUPAC believes the proposed withdrawal would conflict with existing approved county comprehensive and land use plans as well as remove public lands from multiple use. SLUPAC is the only Governor-appointed council that has a county representative from each of Nevada's seventeen counties as well as the Nevada Association of Counties (NACO), the Nevada League of Cities & Municipalities, and the Nevada Indian Commission. SLUPAC provides recommendations and expertise on land use planning and natural resources issues and advises the State Land Use Planning Agency regarding the development of plans and statements of policy. As currently proposed, existing county comprehensive and land use plans in the Railroad Valley would be directly and adversely affected by NASA's withdrawal. These plans designate the public lands identified for withdrawal by NASA as multiple use areas. The withdrawal would remove lands from multiple use. Reserving these public lands for multiple use is important to Nevada. They are managed under a Congressionally mandated policy of multiple use to allow for mining, oil and gas development, recreation, and the protection of natural, historic, and cultural resources. Multiple use activities under the Federal Land Policy and Management Act provide economic benefits to Nevada. These public lands are critical to sustain long-term economic growth and security. The closure of public lands to multiple use activities would also eliminate current revenue sources that are important to local governments.	NASA thanks SLUPAC for its comments, and agrees that FLPMA provides for a policy of multiple use of federal lands, including management of lands in support of scientific values. In addition, the Secretary of the Interior has the authority to make, modify, extend, or revoke withdrawals of federal land in accordance with FLPMA. The purposes of such withdrawals may include limiting activities on federal land to maintain public values in the area or reserving the land for a particular public purpose or program.	7/19/2021	Verbal	

BLM Public Comments for NASA's Proposed RRV Withdrawal

Comment Number	Segment Number	First Name	Last Name	Affiliation	Comment	Response	Date Comment Received	Comment Type	Attachments
38	b	Jake	Tibbitts	State Land Use Planning Advisory Council	Cooperation between Federal, State, Tribal, Local Governments and other stakeholders is critical on the proposed withdrawal of any public lands or change in land use. Efforts must be made to coordinate with the agencies listed above to protect and preserve the natural resources of the State while providing for the future needs of its residents. SLUPAC supports Nevada's local governments and Tribal Nations to have active engagement in this process consistent with their local land use plans and policies. We request that NASA engage with the local governments, Tribal Nations, and other affected stakeholders with specialized land use expertise in this area and invite them to become cooperating agencies on this proposal. To date SLUPAC believes that NASA's level of engagement with local governments and other stakeholders has been lacking with this proposed public land withdrawal. SLUPAC requests that NASA continue to meet with Nye County and other affected stakeholders to discuss the concerns of both parties regarding interests in Railroad Valley. SLUPAC also requests that NASA and the BLM work with Nye County and other affected stakeholders to identify acceptable alternatives or a land management plan that will accommodate multiple uses that will preserve the environment and quality of life in the Railroad Valley while also allowing for the satellite calibration activities to be protected. SLUPAC appreciates the opportunity to review and comment on NASA's request to withdraw public land in the Railroad Valley. SLUPAC looks forward to continuing to work with NASA to implement sound land use planning policies and land management activities throughout Nevada.	NASA agrees that local governments including Nye County are important stakeholders for this proposed public land withdrawal. NASA also understands the County's desire to be involved in the land withdrawal and associated NEPA process. Acknowledging that interest, NASA has held recurring monthly meetings with Nye County and sought the County's input on a variety of issues connected to the proposed action, including the potential socioeconomic impact on the County and its residents. Nye County's frequent input to date has helped to shape the EA. NASA has also coordinated with other agencies with jurisdiction or interest, including BLM, Native American tribes, Nevada Department of Wildlife, and Nevada Division of Natural Heritage. Appendixes 3A and 3B includes copies of this coordination.	7/19/2021	Verbal	

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Appendix 3A
Cultural and Tribal Resources Coordination

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INVENTORY NEEDS ASSESSMENT FORM
Bureau of Land Management Nevada State Office
Cultural Resources Inventory Needs Assessment

BLM Office: Tonopah Field Office

To be completed by Project Manager/Lead: Wendy Seley, Realty Specialist

Project Description/Scope (who, what, when, where, why, how, and how much):

The Bureau of Land Management (BLM) received an application from the National Aeronautics and Space Administration (NASA) requesting that the Secretary of the Interior withdraw and reserve lands necessary for NASA's satellite calibration activities within Railroad Valley (RRV), Nye County, Nevada, area for a period of 20 years, subject to valid existing rights of approximately 22,995.05 acres of public land. NASA has a current right-of-way, N-89562 which covers an existing sensor network for satellite calibration activities on public lands within the boundaries of the proposed withdrawal.

According to the application, RRV is the only location in the United States with the appropriate characteristics to enable satellite calibration and has been used for these purposes since 1993. Alternative sites to RRV are less desirable, due to the effects of human activity, site inhomogeneity, topography, and excessive brightness— all of which negatively impact the accuracy of sensor readings for satellite calibration.

If approved, a Public Land Order would withdraw the public lands described below from all forms of appropriation or other disposition under the public land laws, including mining, mineral leasing, and geothermal leasing laws, subject to valid existing rights, and reserve them for NASA's satellite calibration activities within RRV for a period of 20 years. The land and all resources contained within would remain under the management of the BLM

Legal Description: T. 7 N., R. 56 E., secs. 2 thru 17; secs. 20 thru 27. T. 8 N., R. 56 E., secs. 19 thru 21; secs. 27 thru 35, Mount Diablo Meridian, Nevada, Nye County, NV.

To be completed Cultural Resource Specialist (CR): Cassandra Albush

The proposed undertaking would not create additional disturbance and would maintain the landscape and resources in their current condition. Furthermore, the proposed land withdrawal will not entail a transfer of ownership. Therefore, the BLM has been determined that there is no potential to cause effects to historic properties per 36 CFR 800.3(a)(1) and has no further obligation under Section 106 of the National Historic Preservation Act.

CR Signature:

**CASSANDRA
ALBUSH**

 Digitally signed by CASSANDRA
ALBUSH
Date: 2022.03.08 09:52:37 -08'00'



United States Department of the Interior



BUREAU OF LAND MANAGEMENT
Tonopah Field Office
P.O. Box 911 (1553 South Main Street)
Tonopah, Nevada 89049
Phone: 775-482-7800 Fax: 775-482-7810
<https://www.blm.gov/nevada>

In Reply Refer To:
2300 (NVB0200)
N-98605

MAR 15 2022

CERTIFIED MAIL: 7019 0700 0000 6686 1942 RETURN RECEIPT REQUESTED

Brian Thomas, Tribal Chairman
Shoshone-Paiute Tribes Duck Valley Indian Reservation
PO Box 219
Owyhee, NV 89832

Dear Honorable Chairman Thomas:

The Bureau of Land Management (BLM) received an application from the National Aeronautics and Space Administration (NASA) requesting that the Secretary of the Interior withdraw and reserve approximately 22,684 acres of public land necessary for NASA's satellite calibration activities within Railroad Valley (RRV). NASA has requested that the withdrawal be effective for 20 years, subject to valid existing rights. The public land requested for withdrawal is located in T. 7 N., R. 56 E., secs. 2 through 17 and secs. 20 through 27. T. 8 N., R. 56 E., secs. 19 through 21; and secs. 27 through 35, Mount Diablo Meridian, Nevada, Nye County, NV.

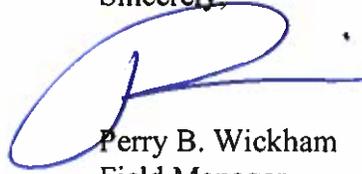
According to NASA's application, RRV is the only location in the United States with the appropriate characteristics to enable satellite calibration and has been used for these purposes since 1993. Alternative sites to RRV are less desirable, because of human activity, site inhomogeneity, topography, and excessive brightness—all of which negatively impact the accuracy of sensor readings for satellite calibration.

If approved, a Public Land Order would withdraw the public lands described below from all forms of appropriation or other disposition under the public land laws, including mining, mineral leasing, and geothermal leasing laws, subject to valid existing rights, and reserve them for NASA's satellite calibration activities within RRV for a period of 20 years. NASA is the lead agency for complying with the National Environmental Policy Act (NEPA) for the proposed withdrawal. The BLM is acting as a cooperating agency for the withdrawal.

The BLM values your knowledge, concerns, and perspectives relating to the project area. In accordance with Executive Order 13175, the BLM asks for your participation in identifying potential areas of concern that may be associated with the proposal. Your information will be considered in the decision-making process. The BLM looks forward to working cooperatively to address your concerns in a thoughtful and respectful manner.

Please feel free to contact Wilfred J. Nabahe, the BLM Battle Mountain District Office Native American Coordinator, at 775-635-4092 or at wnabahe@blm.gov if you have any questions or wish to arrange a meeting or field visit. Thank you for your time and consideration.

Sincerely,

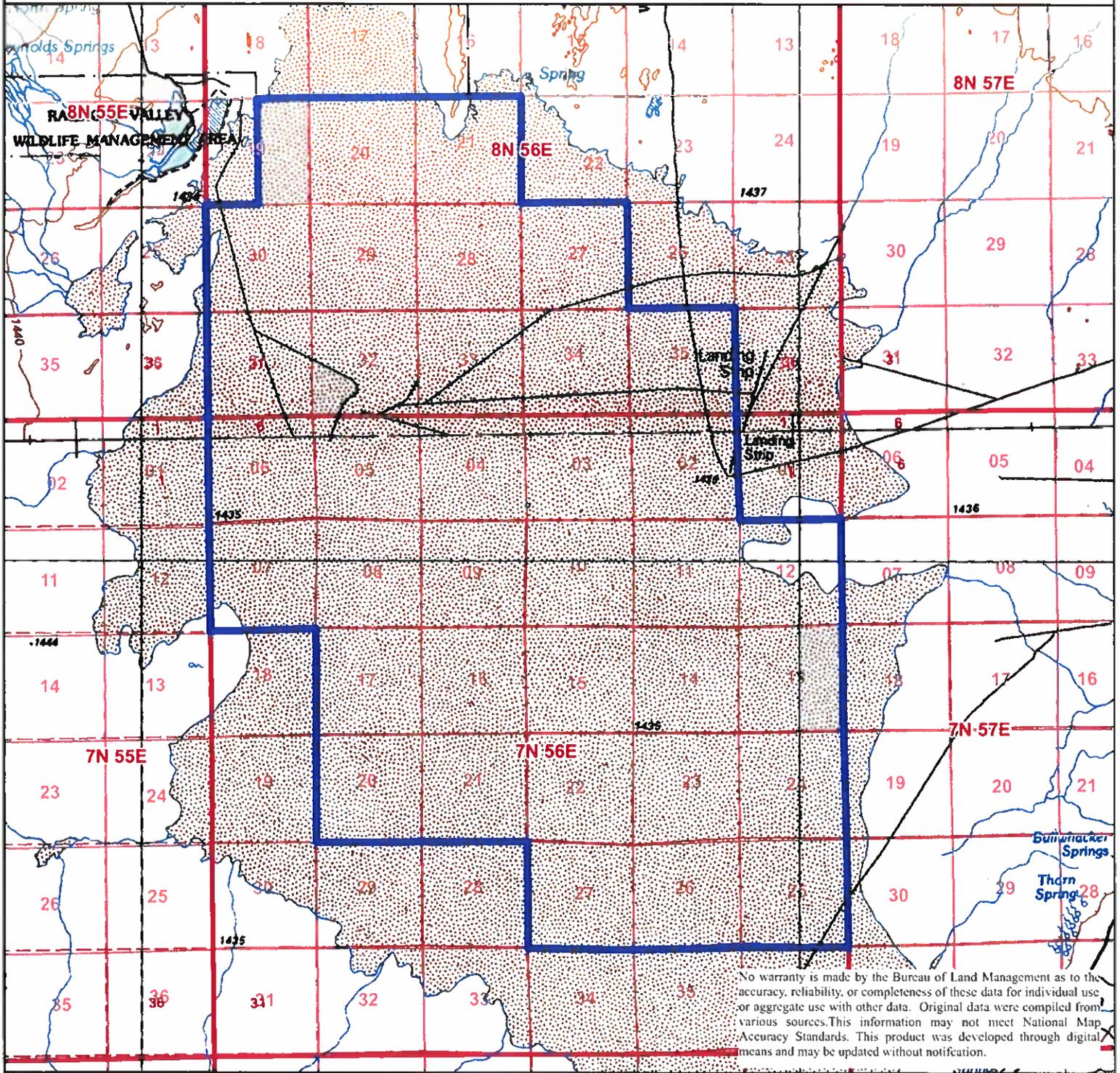


Perry B. Wickham
Field Manager

Enclosure:
Project Area Map

cc:
Tribal Administrator
Division of Natural Resources Manager
THPO

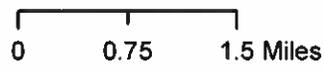
NASA Withdrawal



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. 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.

Battle Mountain District
 Bureau of Land Management
 Tonopah Field Office
 1553 South Main Street
 Tonopah, NV 89409
 3/9/2022

Legend
 Withdrawal area





United States Department of the Interior



BUREAU OF LAND MANAGEMENT
Tonopah Field Office
P.O. Box 911 (1553 South Main Street)
Tonopah, Nevada 89049
Phone: 775-482-7800 Fax: 775-482-7810
<https://www.blm.gov/nevada>

In Reply Refer To:
2300 (NVB0200)
N-98605

MAR 15 2022

CERTIFIED MAIL: 7019 0700 0000 6685 3824 RETURN RECEIPT REQUESTED

Warren Graham, Chairman
Duckwater Shoshone Tribe
PO Box 140068
Duckwater, NV 89314

Dear Chairman Graham:

The Bureau of Land Management (BLM) received an application from the National Aeronautics and Space Administration (NASA) requesting that the Secretary of the Interior withdraw and reserve approximately 22,684 acres of public land necessary for NASA's satellite calibration activities within Railroad Valley (RRV). NASA has requested that the withdrawal be effective for 20 years, subject to valid existing rights. The public land requested for withdrawal is located in T. 7 N., R. 56 E., secs. 2 through 17 and secs. 20 through 27. T. 8 N., R. 56 E., secs. 19 through 21; and secs. 27 through 35, Mount Diablo Meridian, Nevada, Nye County, NV.

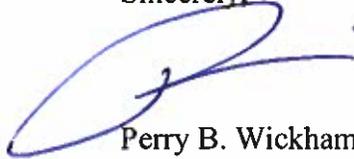
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The BLM values your knowledge, concerns, and perspectives relating to the project area. In accordance with Executive Order 13175, the BLM asks for your participation in identifying potential areas of concern that may be associated with the proposal. Your information will be considered in the decision-making process. The BLM looks forward to working cooperatively to address your concerns in a thoughtful and respectful manner.

Please feel free to contact Wilfred J. Nabahe, the BLM Battle Mountain District Office Native American Coordinator, at 775-635-4092 or at wnabahe@blm.gov if you have any questions or wish to arrange a meeting or field visit. Thank you for your time and consideration.

Sincerely,

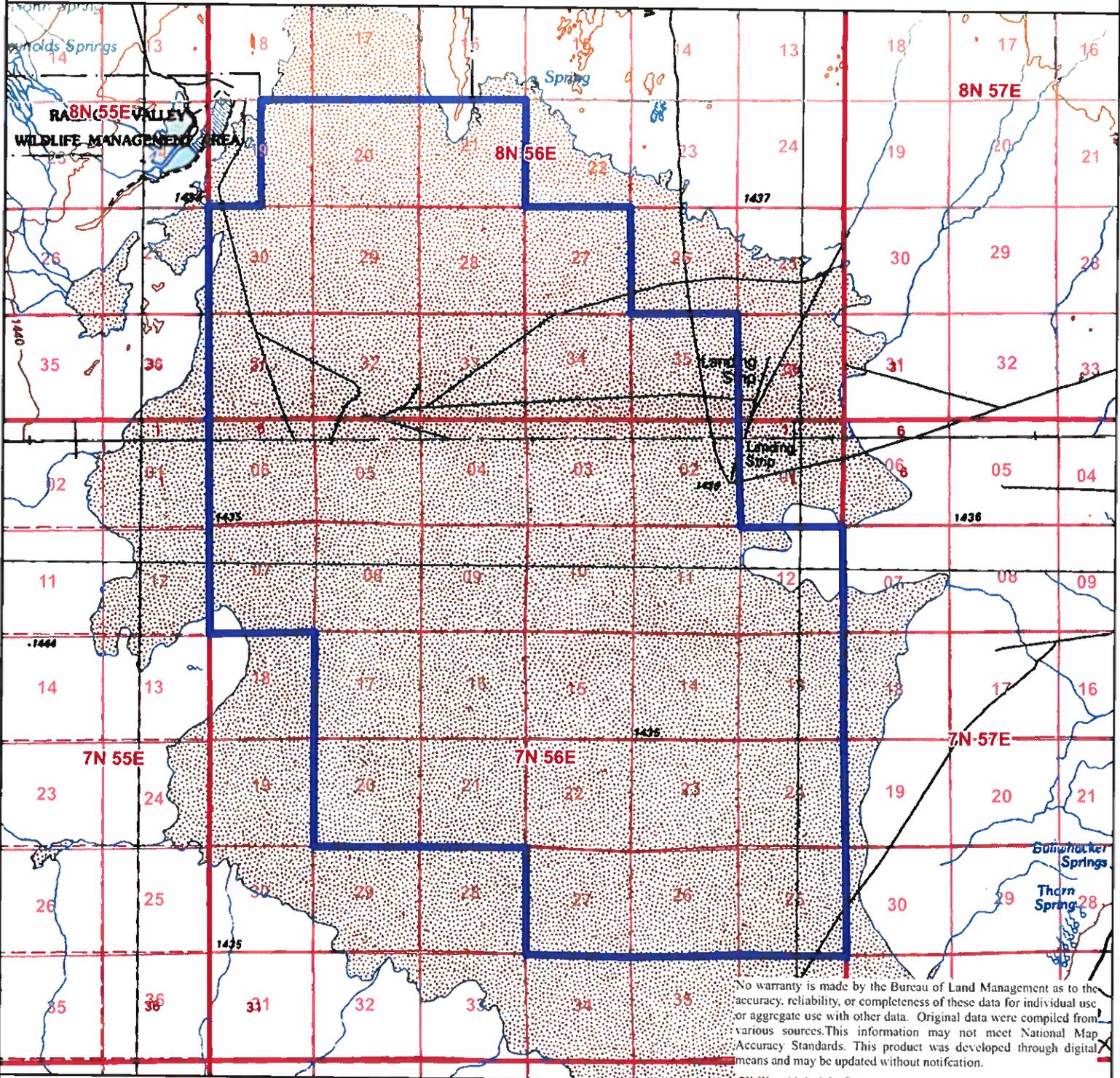


Perry B. Wickham
Field Manager

Enclosure:
Project Area Map

cc:
Tribal Administrator
Division of Natural Resources Manager
THPO

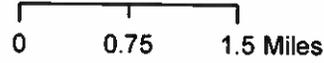
NASA Withdrawal



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Battle Mountain District
Bureau of Land Management
Tonopah Field Office
1553 South Main Street
Tonopah, NV 89409
3/9/2022

Legend
 Withdrawal area





United States Department of the Interior



BUREAU OF LAND MANAGEMENT
Tonopah Field Office
P.O. Box 911 (1553 South Main Street)
Tonopah, Nevada 89049
Phone: 775-482-7800 Fax: 775-482-7810
<https://www.blm.gov/nevada>

In Reply Refer To:
2300 (NVB0200)
N-98605

MAR 15 2022

CERTIFIED MAIL: 7019 0700 0000 6686 1935 RETURN RECEIPT REQUESTED

Diane Buckner, Chairwoman
Ely Shoshone Tribe
16 Shoshone Circle
Ely, NV 89301

Dear Chairwoman Buckner:

The Bureau of Land Management (BLM) received an application from the National Aeronautics and Space Administration (NASA) requesting that the Secretary of the Interior withdraw and reserve approximately 22,684 acres of public land necessary for NASA's satellite calibration activities within Railroad Valley (RRV). NASA has requested that the withdrawal be effective for 20 years, subject to valid existing rights. The public land requested for withdrawal is located in T. 7 N., R. 56 E., secs. 2 through 17 and secs. 20 through 27. T. 8 N., R. 56 E., secs. 19 through 21; and secs. 27 through 35, Mount Diablo Meridian, Nevada, Nye County, NV.

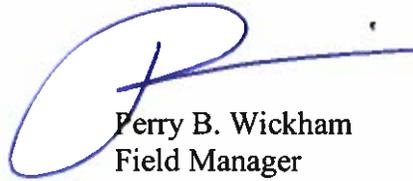
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If approved, a Public Land Order would withdraw the public lands described below from all forms of appropriation or other disposition under the public land laws, including mining, mineral leasing, and geothermal leasing laws, subject to valid existing rights, and reserve them for NASA's satellite calibration activities within RRV for a period of 20 years. NASA is the lead agency for complying with the National Environmental Policy Act (NEPA) for the proposed withdrawal. The BLM is acting as a cooperating agency for the withdrawal.

The BLM values your knowledge, concerns, and perspectives relating to the project area. In accordance with Executive Order 13175, the BLM asks for your participation in identifying potential areas of concern that may be associated with the proposal. Your information will be considered in the decision-making process. The BLM looks forward to working cooperatively to address your concerns in a thoughtful and respectful manner.

Please feel free to contact Wilfred J. Nabahe, the BLM Battle Mountain District Office Native American Coordinator, at 775-635-4092 or at wnabahe@blm.gov if you have any questions or wish to arrange a meeting or field visit. Thank you for your time and consideration.

Sincerely,

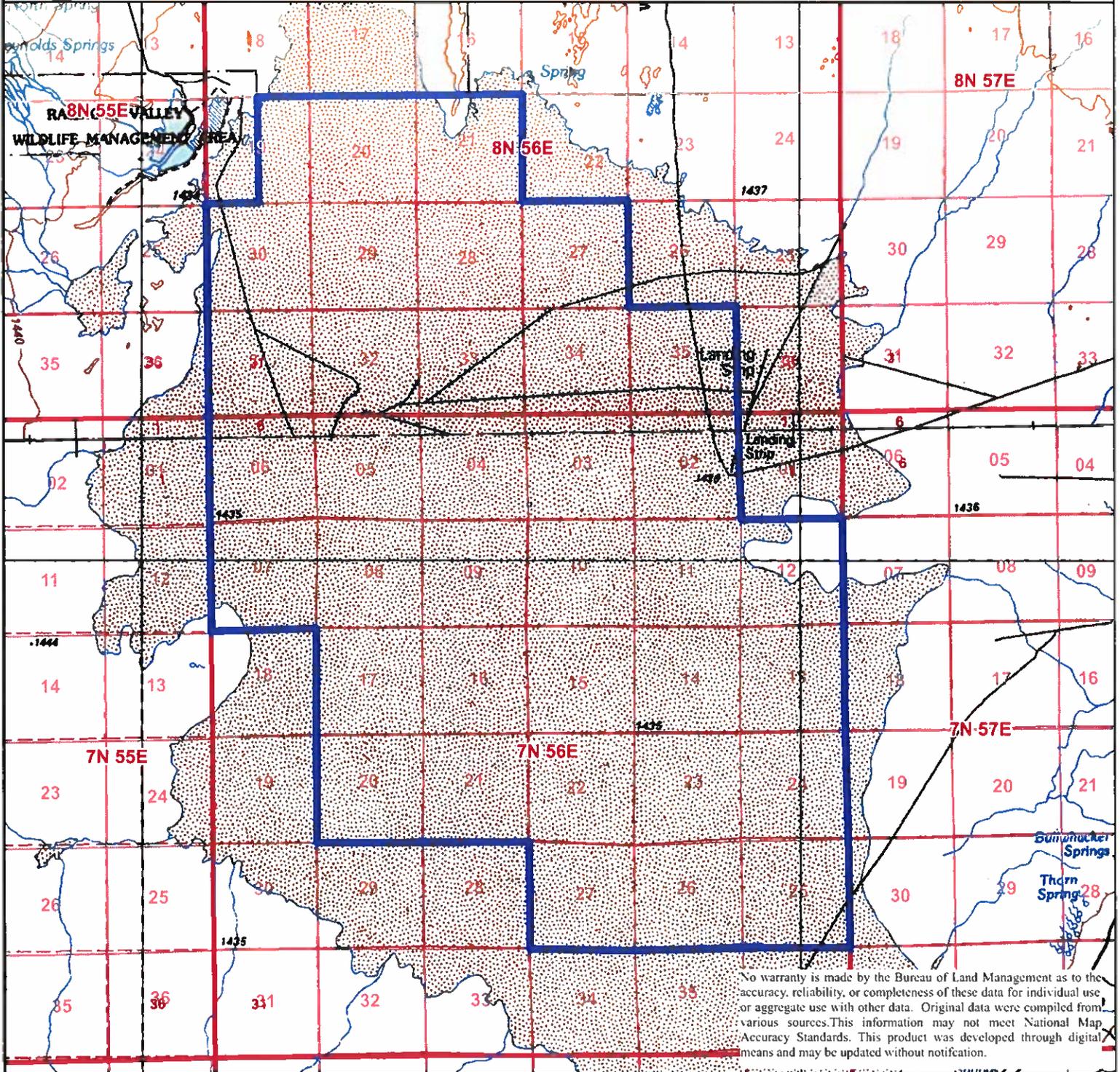
A handwritten signature in blue ink, appearing to read 'Perry B. Wickham', with a large, stylized initial 'P' and a horizontal line extending to the right.

Perry B. Wickham
Field Manager

Enclosure:
Project Area Map

cc:
Tribal Administrator
Division of Natural Resources Manager
THPO

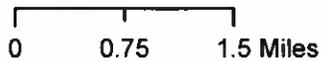
NASA Withdrawal



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Battle Mountain District
 Bureau of Land Management
 Tonopah Field Office
 1553 South Main Street
 Tonopah, NV 89409
 3/9/2022

Legend
 Withdrawal area



Appendix 3B
Special Status Species

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United States Department of the Interior



FISH AND WILDLIFE SERVICE
Reno Fish And Wildlife Office
1340 Financial Boulevard, Suite 234
Reno, NV 89502-7147
Phone: (775) 861-6300 Fax: (775) 861-6301
<http://www.fws.gov/reno/>

In Reply Refer To:

January 13, 2022

Consultation Code: 08ENVD00-2022-SLI-0151

Event Code: 08ENVD00-2022-E-00390

Project Name: NASA Railroad Valley Land Withdrawal

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The attached species list indicates threatened, endangered, proposed, and candidate species and designated or proposed critical habitat that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act of 1973, as amended (ESA, 16 U.S.C. 1531 *et seq.*), for projects that are authorized, funded, or carried out by a Federal agency. Candidate species have no protection under the ESA but are included for consideration because they could be listed prior to the completion of your project. Consideration of these species during project planning may assist species conservation efforts and may prevent the need for future listing actions. For additional information regarding species that may be found in the proposed project area, visit <http://www.fws.gov/nevada/es/ipac.html>.

The purpose of the ESA is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the ESA and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or

designated or proposed critical habitat. Guidelines for preparing a Biological Assessment can be found at: http://www.fws.gov/midwest/endangered/section7/ba_guide.html.

If a Federal action agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species, and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: <http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this species list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally listed, proposed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the ESA, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally, as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation, for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the attached list.

The Nevada Fish and Wildlife Office (NFWO) no longer provides species of concern lists. Most of these species for which we have concern are also on the Animal and Plant At-Risk Tracking List for Nevada (At-Risk list) maintained by the State of Nevada's Natural Heritage Program (Heritage). Instead of maintaining our own list, we adopted Heritage's At-Risk list and are partnering with them to provide distribution data and information on the conservation needs for at-risk species to agencies or project proponents. The mission of Heritage is to continually evaluate the conservation priorities of native plants, animals, and their habitats, particularly those most vulnerable to extinction or in serious decline. In addition, in order to avoid future conflicts, we ask that you consider these at-risk species early in your project planning and explore management alternatives that provide for their long-term conservation.

For a list of at-risk species by county, visit Heritage's website (<http://heritage.nv.gov>). For a specific list of at-risk species that may occur in the project area, you can obtain a data request form from the website (http://heritage.nv.gov/get_data) or by contacting the Administrator of Heritage at 901 South Stewart Street, Suite 5002, Carson City, Nevada 89701-5245, (775) 684-2900. Please indicate on the form that your request is being obtained as part of your coordination with the Service under the ESA. During your project analysis, if you obtain new information or data for any Nevada sensitive species, we request that you provide the information to Heritage at the above address.

Furthermore, certain species of fish and wildlife are classified as protected by the State of Nevada (<http://www.leg.state.nv.us/NAC/NAC-503.html>). You must first obtain the appropriate license, permit, or written authorization from the Nevada Department of Wildlife (NDOW) to

take, or possess any parts of protected fish and wildlife species. Please visit <http://www.ndow.org> or contact NDOW in northern Nevada (775) 688-1500, in southern Nevada (702) 486-5127, or in eastern Nevada (775) 777-2300.

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the Service's wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

The Service's Pacific Southwest Region developed the *Interim Guidelines for the Development of a Project Specific Avian and Bat Protection Plan for Wind Energy Facilities* (Interim Guidelines). This document provides energy facility developers with a tool for assessing the risk of potential impacts to wildlife resources and delineates how best to design and operate a bird- and bat-friendly wind facility. These Interim Guidelines are available upon request from the NFWO. The intent of a Bird and Bat Conservation Strategy is to conserve wildlife resources while supporting project developers through: (1) establishing project development in an adaptive management framework; (2) identifying proper siting and project design strategies; (3) designing and implementing pre-construction surveys; (4) implementing appropriate conservation measures for each development phase; (5) designing and implementing appropriate post-construction monitoring strategies; (6) using post-construction studies to better understand the dynamics of mortality reduction (*e.g.*, changes in blade cut-in speed, assessments of blade "feathering" success, and studies on the effects of visual and acoustic deterrents) including efforts tied into Before-After/Control-Impact analysis; and (7) conducting a thorough risk assessment and validation leading to adjustments in management and mitigation actions.

The template and recommendations set forth in the Interim Guidelines were based upon the Avian Powerline Interaction Committee's Avian Protection Plan template (<http://www.aplic.org/>) developed for electric utilities and modified accordingly to address the unique concerns of wind energy facilities. These recommendations are also consistent with the Service's wind energy guidelines. We recommend contacting us as early as possible in the planning process to discuss the need and process for developing a site-specific Bird and Bat Conservation Strategy.

The Service has also developed guidance regarding wind power development in relation to prairie grouse leks (sage-grouse are included in this). This document can be found at: http://www.fws.gov/southwest/es/Oklahoma/documents/te_species/wind%20power/prairie%20grouse%20lek%205%20mile%20public.pdf.

Migratory Birds are a Service Trust Resource. Based on the Service's conservation responsibilities and management authority for migratory birds under the Migratory Bird Treaty Act of 1918, as amended (MBTA; 16 U.S.C. 703 *et seq.*), we recommend that any land clearing or other surface disturbance associated with proposed actions within the project area be timed to avoid potential destruction of bird nests or young, or birds that breed in the area. Such destruction may be in violation of the MBTA. Under the MBTA, nests with eggs or young of migratory birds may not be harmed, nor may migratory birds be killed. Therefore, we recommend land clearing be conducted outside the avian breeding season. If this is not feasible,

we recommend a qualified biologist survey the area prior to land clearing. If nests are located, or if other evidence of nesting (*i.e.*, mated pairs, territorial defense, carrying nesting material, transporting food) is observed, a protective buffer (the size depending on the habitat requirements of the species) should be delineated and the entire area avoided to prevent destruction or disturbance to nests until they are no longer active.

Guidance for minimizing impacts to migratory birds for projects involving communications towers (*e.g.*, cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

If wetlands, springs, or streams are known to occur in the project area or are present in the vicinity of the project area, we ask that you be aware of potential impacts project activities may have on these habitats. Discharge of fill material into wetlands or waters of the United States is regulated by the U.S. Army Corps of Engineers (ACOE) pursuant to section 404 of the Clean Water Act of 1972, as amended. We recommend you contact the ACOE's Regulatory Section regarding the possible need for a permit. For projects located in northern Nevada (Carson City, Churchill, Douglas, Elko, Esmeralda, Eureka, Humboldt, Lander, Lyon, Mineral, Pershing, Storey, and Washoe Counties) contact the Reno Regulatory Office at 300 Booth Street, Room 3060, Reno, Nevada 89509, (775) 784-5304; in southern Nevada (Clark, Lincoln, Nye, and White Pine Counties) contact the St. George Regulatory Office at 321 North Mall Drive, Suite L-101, St. George, Utah 84790-7314, (435) 986-3979; or in California along the eastern Sierra contact the Sacramento Regulatory Office at 650 Capitol Mall, Suite 5-200, Sacramento, California 95814, (916) 557-5250.

We appreciate your concern for threatened and endangered species. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

The table below outlines lead FWS field offices by county and land ownership/project type. Please refer to this table when you are ready to coordinate (including requests for section 7 consultation) with the field office corresponding to your project, and send any documentation regarding your project to that corresponding office. Therefore, the lead FWS field office may not be the office listed above in the letterhead.

Lead FWS offices by County and Ownership/Program

County	Ownership/Program	Species	Office Lead*
Alameda	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Alameda	All ownerships but tidal/estuarine	All	SFWO
Alpine	Humboldt Toiyabe National Forest	All	RFWO

Alpine	Lake Tahoe Basin Management Unit	All	RFWO
Alpine	Stanislaus National Forest	All	SFWO
Alpine	El Dorado National Forest	All	SFWO
Colusa	Mendocino National Forest	All	AFWO
Colusa	Other	All	By jurisdiction (see map)
Contra Costa	Legal Delta (Excluding ECCHCP)	All	BDFWO
Contra Costa	Antioch Dunes NWR	All	BDFWO
Contra Costa	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Contra Costa	All ownerships but tidal/estuarine	All	SFWO
Del Norte	All	All	AFWO
El Dorado	El Dorado National Forest	All	SFWO
El Dorado	LakeTahoe Basin Management Unit		RFWO
Glenn	Mendocino National Forest	All	AFWO
Glenn	Other	All	By jurisdiction (see map)
	All except Shasta Trinity National Forest	All	AFWO
Humboldt			
Humboldt	Shasta Trinity National Forest	All	YFWO
Lake	Mendocino National Forest	All	AFWO
Lake	Other	All	By jurisdiction (see map)
Lassen	Modoc National Forest	All	KFWO
Lassen	Lassen National Forest	All	SFWO
Lassen	Toiyabe National Forest	All	RFWO
Lassen	BLM Surprise and Eagle Lake Resource Areas	All	RFWO

Lassen	BLM Alturas Resource Area	All	KFWO
Lassen	Lassen Volcanic National Park	All (includes Eagle Lake trout on all ownerships)	SFWO
Lassen	All other ownerships	All	By jurisdiction (see map)
Marin	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Marin	All ownerships but tidal/estuarine	All	SFWO
Mendocino	Russian River watershed	All	SFWO
Mendocino	All except Russian River watershed	All	AFWO
Modoc	Modoc National Forest	All	KFWO
Modoc	BLM Alturas Resource Area	All	KFWO
Modoc	Klamath Basin National Wildlife Refuge Complex	All	KFWO
Modoc	BLM Surprise and Eagle Lake Resource Areas	All	RFWO
Modoc	All other ownerships	All	By jurisdiction (See map)
Mono	Inyo National Forest	All	RFWO
Mono	Humboldt Toiyabe National Forest	All	RFWO
	All ownerships but tidal/estuarine	All	SFWO
Napa			
Napa	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Nevada	Humboldt Toiyabe National Forest	All	RFWO
Nevada	All other ownerships	All	By jurisdiction (See map)

Placer	Lake Tahoe Basin Management Unit	All	RFWO
Placer	All other ownerships	All	SFWO
Sacramento	Legal Delta	Delta Smelt	BDFWO
Sacramento	Other	All	By jurisdiction (see map)
San Francisco	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
San Francisco	All ownerships but tidal/estuarine	All	SFWO
San Mateo	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
San Mateo	All ownerships but tidal/estuarine	All	SFWO
San Joaquin	Legal Delta excluding San Joaquin HCP	All	BDFWO
San Joaquin	Other	All	SFWO
Santa Clara	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
Santa Clara	All ownerships but tidal/estuarine	All	SFWO
Shasta	Shasta Trinity National Forest except Hat Creek Ranger District (administered by Lassen National Forest)	All	YFWO
Shasta	Hat Creek Ranger District	All	SFWO
Shasta	Bureau of Reclamation (Central Valley Project)	All	BDFWO
Shasta	Whiskeytown National Recreation Area	All	YFWO

Shasta	BLM Alturas Resource Area	All	KFWO
Shasta	Caltrans	By jurisdiction	SFWO/AFWO
Shasta	Ahjumawi Lava Springs State Park	Shasta crayfish	SFWO
Shasta	All other ownerships	All	By jurisdiction (see map)
Shasta	Natural Resource Damage Assessment, all lands	All	SFWO/BDFWO
Sierra	Humboldt Toiyabe National Forest	All	RFWO
Sierra	All other ownerships	All	SFWO
Siskiyou	Klamath National Forest (except Ukonom District)	All	YFWO
Siskiyou	Six Rivers National Forest and Ukonom District	All	AFWO
Siskiyou	Shasta Trinity National Forest	All	YFWO
Siskiyou	Lassen National Forest	All	SFWO
Siskiyou	Modoc National Forest	All	KFWO
Siskiyou	Lava Beds National Volcanic Monument	All	KFWO
Siskiyou	BLM Alturas Resource Area	All	KFWO
Siskiyou	Klamath Basin National Wildlife Refuge Complex	All	KFWO
Siskiyou	All other ownerships	All	By jurisdiction (see map)
Solano	Suisun Marsh	All	BDFWO
Solano	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Solano	All ownerships but tidal/estuarine	All	SFWO
Solano	Other	All	By jurisdiction (see map)

Sonoma	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Sonoma	All ownerships but tidal/estuarine	All	SFWO
Tehama	Mendocino National Forest	All	AFWO
Tehama	Shasta Trinity National Forest except Hat Creek Ranger District (administered by Lassen National Forest)	All	YFWO
Tehama	All other ownerships	All	By jurisdiction (see map)
Trinity	BLM	All	AFWO
Trinity	Six Rivers National Forest	All	AFWO
Trinity	Shasta Trinity National Forest	All	YFWO
Trinity	Mendocino National Forest	All	AFWO
Trinity	BIA (Tribal Trust Lands)	All	AFWO
Trinity	County Government	All	AFWO
Trinity	All other ownerships	All	By jurisdiction (See map)
Yolo	Yolo Bypass	All	BDFWO
Yolo	Other	All	By jurisdiction (see map)
All	FERC-ESA	All	By jurisdiction (see map)
All	FERC-ESA	Shasta crayfish	SFWO
All	FERC-Relicensing (non-ESA)	All	BDFWO

***Office Leads:**

AFWO=Arcata Fish and Wildlife Office

BDFWO=Bay Delta Fish and Wildlife Office

KFWO=Klamath Falls Fish and Wildlife Office

RFWO=Reno Fish and Wildlife Office

YFWO=Yreka Fish and Wildlife Office

Attachment(s):

- Official Species List
 - USFWS National Wildlife Refuges and Fish Hatcheries
 - Migratory Birds
 - Wetlands
-

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Reno Fish And Wildlife Office

1340 Financial Boulevard, Suite 234

Reno, NV 89502-7147

(775) 861-6300

Project Summary

Consultation Code: 08ENVD00-2022-SLI-0151

Event Code: Some(08ENVD00-2022-E-00390)

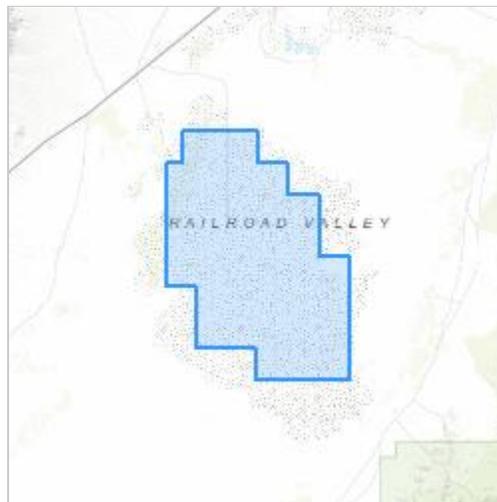
Project Name: NASA Railroad Valley Land Withdrawal

Project Type: ** OTHER **

Project Description: Under the Proposed Action, the Bureau of Land Management (BLM) would withdraw approximately 22,684 acres of public lands on a dry lakebed playa in Railroad Valley (RRV), Nevada. The withdrawal would preserve the lands for National Aeronautics and Space Administration (NASA) Earth-observing satellite calibration activities and would limit allowable activities under the general land laws for a period of 20 years. The RRV site is considered the only location in the United States with the characteristics necessary to enable satellite calibration. Under the Proposed Action, NASA would be able to install additional satellite calibration devices on the RRV playa; however, these devices would consist of relatively small and mostly mobile structures. No permanent construction or alteration of the RRV surface that measurably alters the reflectivity of the surface of RRV would be allowed at the site.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@38.48776455,-115.67281981138832,14z>



Counties: Nye County, Nevada

Endangered Species Act Species

There is a total of 4 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
Southwestern Willow Flycatcher <i>Empidonax traillii extimus</i> There is final critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/6749	Endangered
Yellow-billed Cuckoo <i>Coccyzus americanus</i> Population: Western U.S. DPS There is final critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Fishes

NAME	STATUS
Railroad Valley Springfish <i>Crenichthys nevadae</i> There is final critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/302	Threatened

Insects

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

THERE ARE NO FWS MIGRATORY BIRDS OF CONCERN WITHIN THE VICINITY OF YOUR PROJECT AREA.

Migratory Birds FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [AKN Phenology Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical](#)

[Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Wetlands

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

WETLAND INFORMATION WAS NOT AVAILABLE WHEN THIS SPECIES LIST WAS GENERATED. PLEASE VISIT [HTTPS://WWW.FWS.GOV/WETLANDS/DATA/MAPPER.HTML](https://www.fws.gov/wetlands/data/mapper.html) OR CONTACT THE FIELD OFFICE FOR FURTHER INFORMATION.



STEVE SISOLAK
Governor

STATE OF NEVADA

DEPARTMENT OF WILDLIFE

6980 Sierra Center Parkway, Suite 120

Reno, Nevada 89511

Phone (775) 688-1500 • Fax (775) 688-1595

TONY WASLEY
Director

BONNIE LONG
Deputy Director

JACK ROBB
Deputy Director

Amy Keith
NASA NEPA Project Manager
NASA
300 E St SW
Washington, DC 20024

February 15, 2022

Re: Railroad Valley

Dear Amy Keith:

I am responding to your request for information from the Nevada Department of Wildlife (NDOW) on the known or potential occurrence of wildlife resources in the vicinity of the Railroad Valley located in Nye County, Nevada. In order to fulfill your request, an analysis was performed using the best available data from the NDOW's wildlife occurrences, raptor nest sites and ranges, greater sage-grouse leks and habitat, and big game distributions databases. No warranty is made by the NDOW as to the accuracy, reliability, or completeness of the data for individual use or aggregate use with other data. These data should be considered **sensitive** and may contain information regarding the location of sensitive wildlife species or resources. All appropriate measures should be taken to ensure that the use of this data is strictly limited to serve the needs of the project described on your GIS Data Request Form. Abuse of this information has the potential to adversely affect the existing ecological status of Nevada's wildlife resources and could be cause for the denial of future data requests.

To adequately provide wildlife resource information in the vicinity of the proposed project the NDOW delineated an area of interest that included a four-mile buffer around the project area provided by you on Tuesday, February 1, 2022. Wildlife resource data was queried from the NDOW databases based on this area of interest. The results of this analysis are summarized below.

Big Game - Occupied pronghorn antelope distribution exists throughout the entire project area and four-mile buffer area. Occupied bighorn sheep and mule deer distributions exist outside of the project area within portions of the four-mile buffer area. No known occupied elk distribution exists in the vicinity of the project area. Please refer to the attached maps for details regarding big game distributions relative to the proposed project area.

Greater Sage-Grouse - Greater sage-grouse habitat in the vicinity of the project area has primarily been classified as Other habitat by the Nevada Sagebrush Ecosystem Program (<http://sagebrusheco.nv.gov>). General habitat also exists in the vicinity of the project area. Please refer to the attached map for details regarding greater sage-grouse habitat relative to the proposed project area. There are no known radio-marked greater sage-grouse tracking locations in the vicinity of the project area. There are no known greater sage-grouse lek sites in the vicinity of the project area.

Raptors - Various species of raptors, which use diverse habitat types, may reside in the vicinity of the project area. American kestrel, bald eagle, barn owl, burrowing owl, Cooper's hawk, ferruginous hawk, golden eagle, great horned owl, long-eared owl, merlin, northern goshawk, northern harrier, northern saw-whet owl, osprey, peregrine falcon, red-tailed hawk, rough-legged hawk, sharp-shinned hawk, short-eared owl, Swainson's hawk, turkey vulture, and western screech owl have distribution ranges that include the project area and four-mile buffer area. Furthermore, golden eagle, northern harrier, prairie falcon, red-tailed hawk, and rough-legged hawk have been directly observed in the vicinity of the project area.

Raptor species are protected by State and Federal laws. In addition, bald eagle, burrowing owl, California spotted owl, ferruginous hawk, flammulated owl, golden eagle, northern goshawk, peregrine falcon, prairie falcon, and short-eared owl are NDOW species of special concern and are target species for conservation as outlined by the Nevada Wildlife Action Plan. Per the *Interim Golden Eagle Technical Guidance: Inventory and Monitoring Protocols; and Other Recommendations in Support of Golden Eagle Management and Permit Issuance* (United States Fish and Wildlife Service 2010) we have queried our raptor nest database to include raptor nest sites within ten miles of the proposed project area. There are 18 known raptor nest sites within ten miles of the project area:

Last Active	Last Check	Township/Range/Section	Probable Use
	10/23/1978		accipiter/buteo
	1/1/1984		accipiter/buteo
	5/10/2012		buteo
	5/10/2012		buteo
	5/10/2012		buteo
	5/10/2012		corvid
	5/10/2012		eagle
	5/10/2012		eagle/buteo
	5/15/2007		falcon
	4/17/2008		ferruginous hawk

Other Wildlife Resources

There are no water developments in the vicinity of the project area. Additional species have also been observed in the vicinity of the project area. Please refer to the appendix for details regarding these species.

The proposed project area may also be in the vicinity of abandoned mine workings, which often provide habitat for state and federally protected wildlife, especially bat species, many of which are protected under NAC 503.030. To request data regarding known abandoned mine workings in the vicinity of the project area please contact the Nevada Division of Minerals (<http://minerals.state.nv.us/>).

The above information is based on data stored at our Reno Headquarters Office and does not necessarily incorporate the most up to date wildlife resource information collected in the field. Please contact the Habitat Division Supervising Biologist at our to discuss the current environmental conditions for your project area and the interpretation of our analysis. Furthermore, it should be noted that the information detailed above is preliminary in nature and not necessarily an identification of every wildlife resource concern associated with the proposed project. Consultation with the Supervising Habitat biologist will facilitate the development of appropriate survey protocols and avoidance or mitigation measures that may be required to address potential impacts to wildlife resources.

Brad Hardenbrook - Southern Region Supervising Habitat Biologist (702.668.3960)

Federally listed Threatened and Endangered species are also under the jurisdiction of the United States Fish and Wildlife Service. Please contact them for more information regarding these species.

If you have any questions regarding the results or methodology of this analysis, please do not hesitate to contact Jinna Larkin at (775) 688-1580.

Appendix: Other Wildlife Species Table

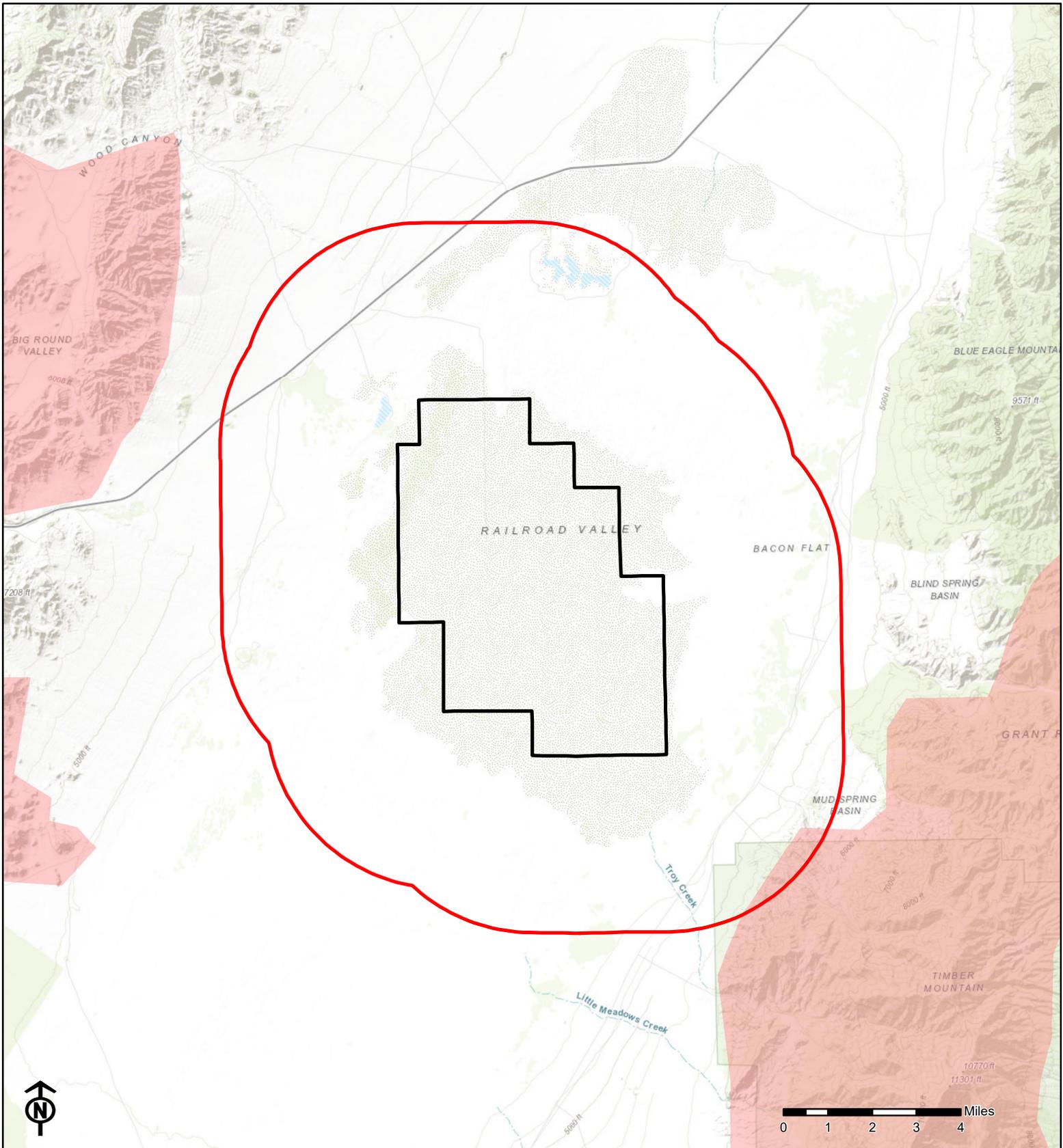
Common Name	ESA	State	SWAP SoCP
American avocet		Protected	Yes
American badger			
American coot			
American wigeon			
barn swallow		Protected	
belted kingfisher		Protected	
black-bellied plover		Protected	
black-crowned night-heron		Protected	
black-necked stilt		Protected	
blue-winged teal			
bluegill			
Canada goose			
chukar			
cinnamon teal			
common raven		Protected	
common snipe			
desert horned lizard			Yes
eared grebe		Protected	
gadwall			
grasshopper mouse (unknown)			
Great Basin collared lizard			Yes
Great Basin fence lizard			
Great Basin gophersnake			
Great Basin whiptail			
great blue heron		Protected	
greater sandhill crane			Yes
kit fox		Furbearer	
largemouth bass			
little pocket mouse			
loggerhead shrike		Sensitive	Yes
long-nosed leopard lizard			Yes
Merriam's kangaroo rat			
myotis (unknown)			
North American deer mouse			
northern pintail			Yes
northern shoveler			
northern zebra-tailed lizard			
pale kangaroo mouse		Protected	Yes
pondsnail (unknown)			
Railroad Valley springfish	Threatened	Threatened	Yes
red racer			
redhead			Yes
ruddy duck			
semipalmated plover		Protected	
snowy egret		Protected	
sora			

springsnail (unknown)		
Townsend's big-eared bat	Sensitive	Yes
transverse gland pyrg		Yes
western kingbird	Protected	
western snowy plover	Protected	Yes
western tanager	Protected	
white-faced ibis	Protected	Yes
Wilson's phalarope		Yes
yellow-backed spiny lizard		
zebra-tailed lizard		

ESA: Endangered Species Act Status

State: State of Nevada Special Status

SWAP SoCP: Nevada State Wildlife Action Plan (2012) Species of Conservation Priority



-  Project Area
-  Four Mile Buffer Area Boundary
-  Bighorn Sheep Distribution

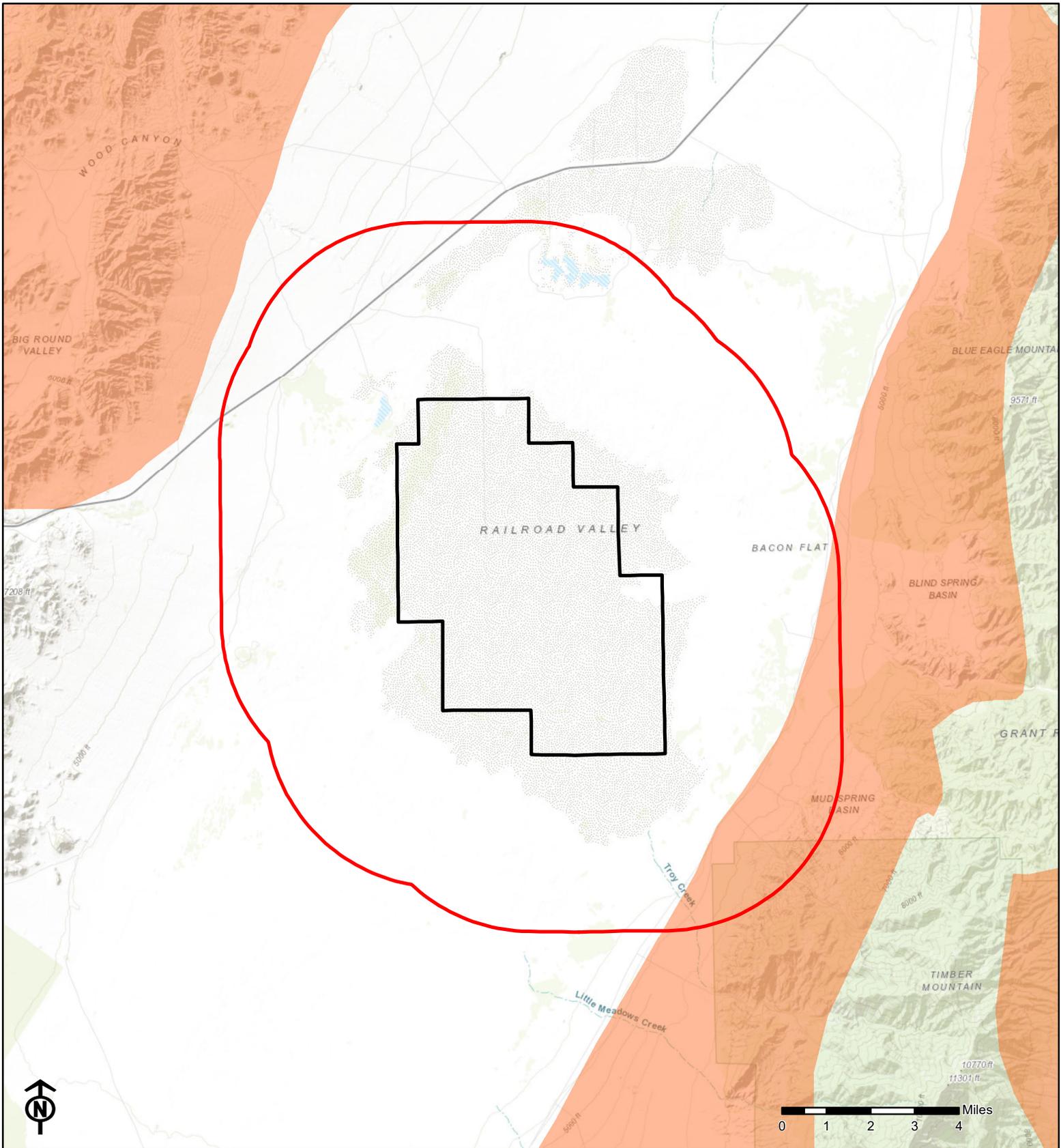
Railroad Valley Bighorn Sheep Distribution

February 15, 2022

Projection: UTM Zone 11 North, NAD83

No warranty is made by the Nevada Department of Wildlife as to the accuracy, reliability, or completeness of the data for individual use or aggregate use with other data.





-  Project Area
-  Four Mile Buffer Area Boundary
-  Mule Deer Distribution

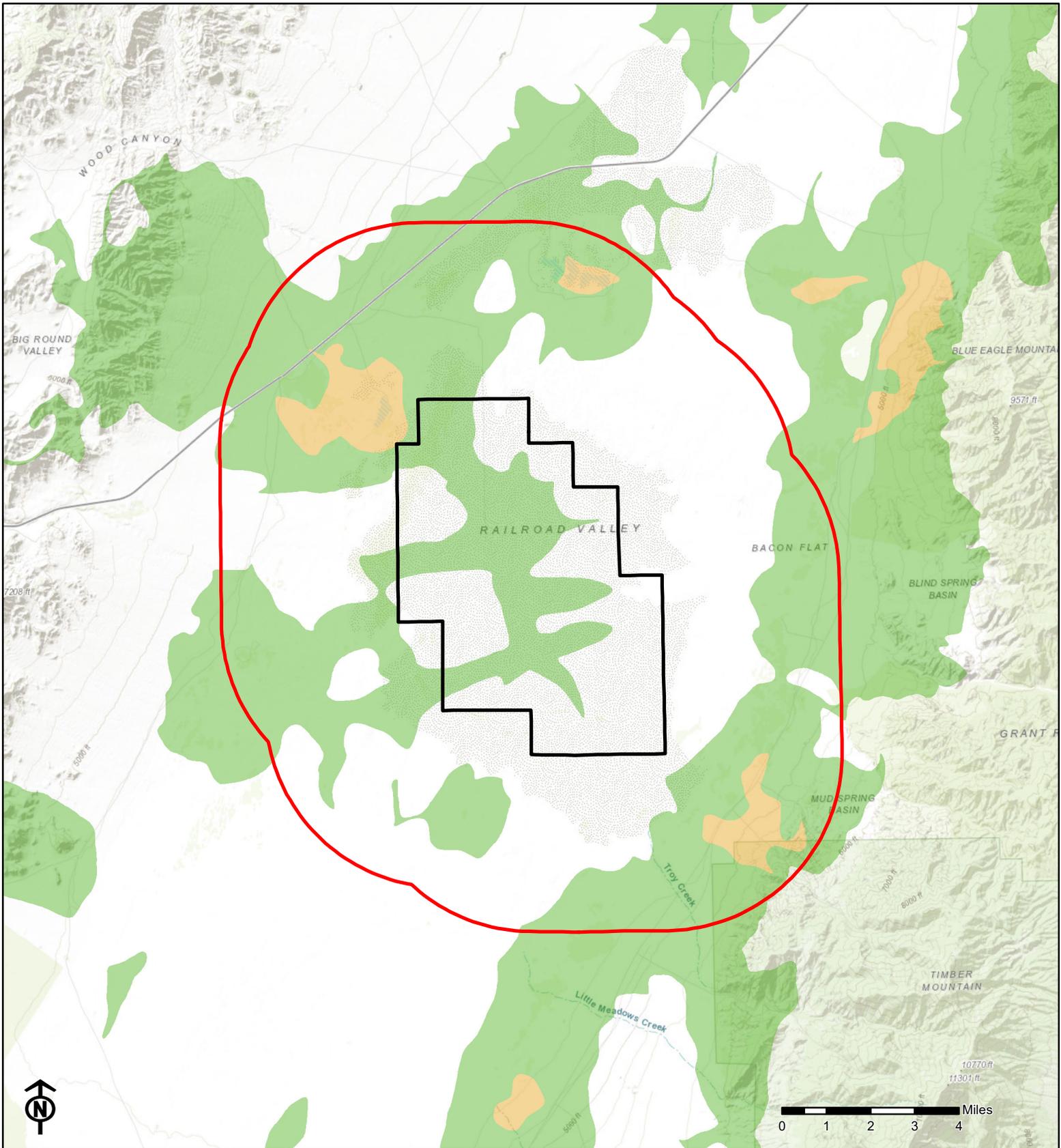
Railroad Valley Mule Deer Distribution

February 15, 2022

Projection: UTM Zone 11 North, NAD83

No warranty is made by the Nevada Department of Wildlife
as to the accuracy, reliability, or completeness of the data
for individual use or aggregate use with other data.





-  Project Area
-  Four Mile Buffer Area Boundary
-  Priority Habitat
-  General Habitat
-  Other Habitat
-  Bi-State Habitat

Railroad Valley Greater Sage-Grouse Habitat

February 15, 2022

Projection: UTM Zone 11 North, NAD83

No warranty is made by the Nevada Department of Wildlife as to the accuracy, reliability, or completeness of the data for individual use or aggregate use with other data.





STATE OF NEVADA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
Nevada Division of Natural Heritage

02 February 2022

Amy Keith
National Aeronautics and Space Administration
300 E. St., SW
Washington DC 20024

RE: Data request received 01 February 2022

Dear Ms. Keith:

We are pleased to provide the information you requested on endangered, threatened, candidate, and/or At-Risk plant and animal taxa recorded within or near the NASA Land Withdraw Railroad Valley Project area, in Nye County. We searched our database and maps for the following, a 2-kilometer radius project shapefile provided.

Township 07N Range 56E Sections 02-17 and 20-27
Township 08N Range 56E Sections 19-21 and 27-35

There are no at-risk taxa recorded within the given area. However, habitat may be available for: the Railroad Valley skipper, *Hesperia uncas fulvapalla*, a Nevada Bureau of Land Management (BLM) Sensitive Species; the Railroad Valley globemallow, *Sphaeralcea caespitosa* var. *williamsiae*, a Nevada BLM Sensitive Species; the Railroad Valley Tui Chub, *Siphateles bicolor* ssp. 7, a Nevada BLM Sensitive Species; and the Ripley biscuitroot, *Cymopterus ripleyi* var. *ripleyi*, a Taxon determined to be Imperiled by the Nevada Division of Natural Heritage. The Nevada Department of Wildlife (NDOW) manages, protects, and restores Nevada's wildlife resources and associated habitat. Please contact Jinna Larkin, NDOW GIS Coordinator (775) 688-1580 to obtain further information regarding wildlife resources within and near your area of interest. Removal or destruction of state protected flora species requires a special permit from Nevada Division of Forestry (NRS 527.270).

Please note that our data are dependent on the research and observations of many individuals and organizations and in most cases are not the result of comprehensive or site-specific field surveys. Natural Heritage reports should never be regarded as final statements on the taxa or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments.

Thank you for checking with our program. Please contact us for additional information or further assistance.

Sincerely,

A blue ink signature of Eric S. Miskow.

Eric S. Miskow
Biologist/Data Manager