



22 JUL 16 09:11:04

**DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS 99TH AIR BASE WING (ACC)  
NELLIS AIR FORCE BASE NEVADA**

Lieutenant Colonel Michael A. Freeman  
Commander  
6020 Beale Ave.  
Nellis AFB NV 89191

**JUL 18 2016**

Ms. Rebecca Palmer  
State Historic Preservation Officer  
State Historic Preservation Office  
Department of Conservation and Natural Resources  
901 South Stewart Street, Ste. 5004  
Carson City NV 89701-5248

Dear Ms Palmer

The United States Air Force (USAF) is now preparing a *Legislative Environmental Impact Statement (LEIS) for the Nevada Test and Training Range (NTTR) Land Withdrawal* extension and proposed expansion. Because the current NTTR land withdrawal (Attachment 1) will expire in 2021, the USAF seeks Congressional action to extend the currently withdrawn lands for the purpose of continuing the existing test and training activities. The USAF is also considering a proposal for Congress to expand lands withdrawn for the NTTR (Attachment 2) to provide additional security and safety while enhancing the functionality and capacity of the NTTR. The additional features associated with the proposed expansion are critical to meet increasing demands on the NTTR to satisfy national security requirements. Under this concept, the USAF proposes to expand the withdrawn lands associated with EC South on the west side of the range, 64C/D and 65D on the south side of the range and east of 62A/B, for a total of approximately 310,000 acres.

While Congress and the President ultimately make the decision with respect to legislative withdrawals such as this one, the USAF anticipates engaging in undertakings in the future, should the withdrawal be enacted. In addition, the proposed expansion would change the accessibility of these lands depending upon the alternative means of implementing these features as determined by Congress. Therefore, in accordance with Section 106 of the National Historic Preservation Act (NHPA) and 36 C.F.R. §800.1(c), the USAF seeks to consult with you early in the planning process in order to take into account any historic preservation concerns you may have as it formulates these undertakings.

The types of activities that are now taking place on existing withdrawn lands will not change under the withdrawal extension. While the USAF has identified the general types of activities that will take place in the proposed withdrawal expansion area, specific activities and their locations cannot be defined until after enactment of any withdrawal legislation. As a result, the USAF is preparing an LEIS which is programmatic in nature. The LEIS will identify cultural resources within proposed withdrawal areas, and to the extent possible address impacts to those

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resources based on the types of activities that may occur in the future in these areas. Specific future activities would be subject to additional and appropriate NEPA analysis and NHPA consultation.

To develop the LEIS and meet NHPA obligations, the USAF would use existing cultural resource information for the current NTTR lands. It plans to initiate a Cultural Resources Study of 15,000 acres of land within the proposed withdrawal expansion areas to identify and characterize resources that may be present. Because the proposed expansion areas consist of over 300,000 acres and the results of the land withdrawal process may not be known until 2021, the Air Force has developed a draft plan to characterize cultural resources through a random-sample survey strategy in these areas. The plan will be supplemented by any previous studies in these areas and associated available data; all identified cultural resources 50 years or older will be recorded as part of the survey (including historical structures). This survey will also serve to supplement and test a successful probabilistic model developed for work conducted previously on the adjacent NTTR property. The USAF has included the proposed plan to address characterization of historic properties as Attachment 3 to this letter.

Sixteen federally recognized tribes, as well as the Pahrump Paiute Tribe, that have an interest in the NTTR Land Withdrawal LEIS have been contacted and offered an opportunity to partner in cultural resource studies and participate as consulting parties. Tribes affiliated with Nellis AFB (NAFB) include: the Benton Paiute Tribe, Fort Independence Paiute Tribe, Duckwater Shoshone Tribe, Timbisha Shoshone Tribe, Yomba Shoshone Tribe, Ely Shoshone Tribe, Big Pine Paiute Tribe, Lone Pine Paiute-Shoshone Tribe, Bishop Paiute Tribe, Fort Mojave Tribe, Colorado River Indian Tribes, Chemehuevi Indian Tribe, Kaibab Band of Southern Paiutes, Las Vegas Paiute Tribe, Moapa Band of Paiutes, Pahrump Paiute Tribe, Paiute Indian Tribe of Utah (Tribes). The USAF initiated discussions with these Tribes by visiting tribal offices and informally discussing the NTTR land withdrawal project in February/March of 2015.

In November of 2015, the USAF held a second informational meeting on NAFB, where the tribes were invited to comment on the project and provide feedback on issues important to them. As a result of this meeting, the tribes requested that four additional meetings be held at locations around Nevada and California that were more conveniently located for tribal members to attend. These meetings were held from April 25-29 at the Bishop Paiute Tribe Reservation, the Ely Shoshone Tribal Reservation, the Mojave Tribal Reservation, and at the Las Vegas Paiute Tribal Reservation. A government-to-government letter initiating formal consultations to all seventeen federally recognized tribes was sent to all tribes on June 22, 2016. In addition to these interactions, the tribes are providing input on special studies associated with the LEIS. The attached Cultural and Paleontological Survey Plan (Duke, 2016) was submitted to the NAFB affiliated tribes for review and input in March 2016. So far, the Tribes have not requested any modifications to the survey strategy.

For consultation with your office, the USAF identifies the Area of Potential Effect as the extended and potentially expanded withdrawn NTTR lands. The USAF invites your comments regarding the following:

- Outstanding cultural and/or tribal resources.
- The potential for irresolvable management conflicts, such as areas where it would be difficult or impossible to avoid, minimize, or mitigate impacts from future actions.
- Any other issues or concerns you request be considered during preparation of the LEIS.

As the USAF develops the LEIS, it will continue consulting with you under Section 106 and provide the necessary information and determinations for established procedures under NHPA. We look forward to the NV SHPO's valuable contributions as we work collaboratively for the preservation of the historic resources entrusted to the stewardship of the USAF on the withdrawn NTTR lands.

If you have any questions or comments regarding the information presented in this letter, please contact the NAFB cultural resource manager and tribal liaison Ms. Kish LaPierre, 702-652-5813 or [kish.lapierre@us.af.mil](mailto:kish.lapierre@us.af.mil).

Sincerely



MICHAEL A. FREEMAN, Lt Col, USAF  
Commander

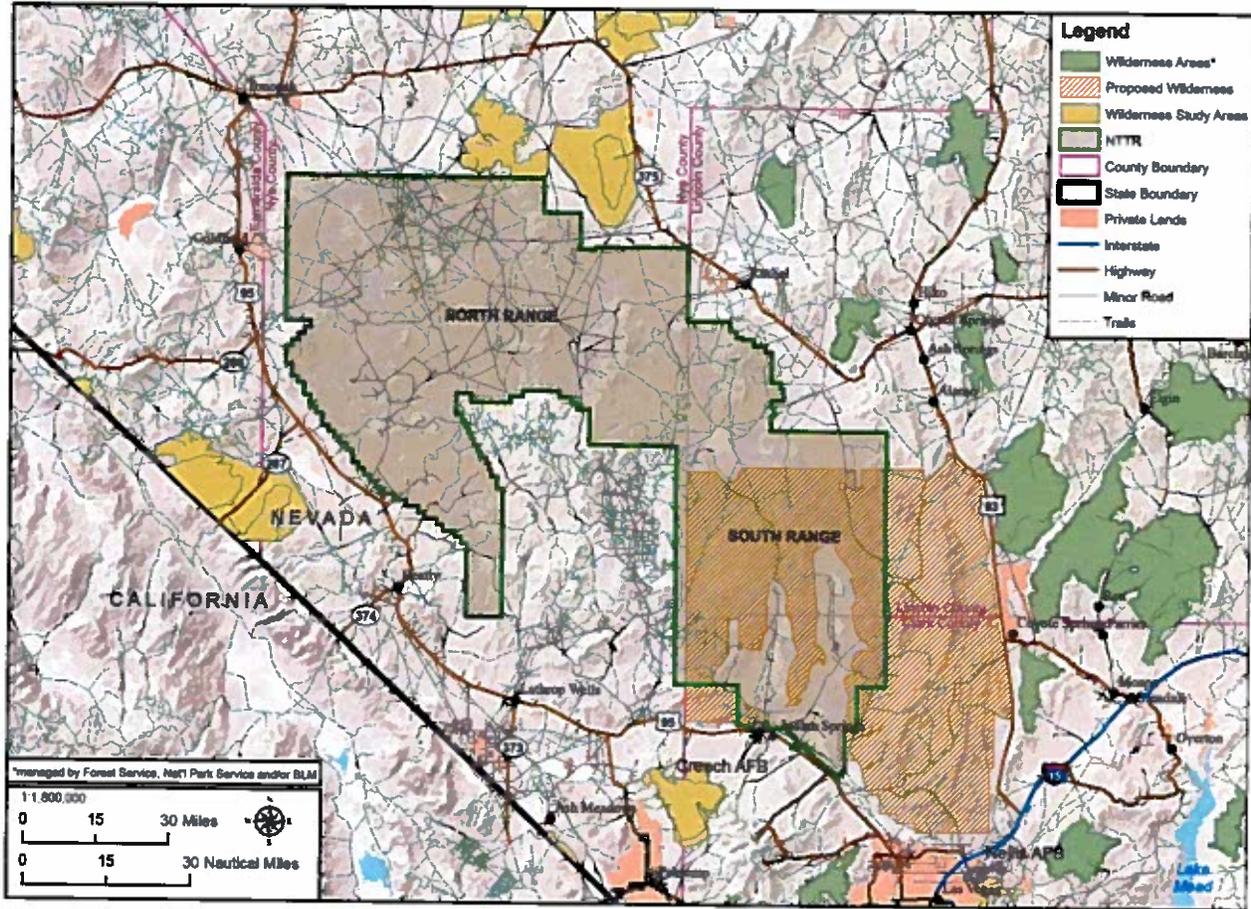
Attachments:

1. Location of the NTTR, Population Centers, Roadway Infrastructure, and Wilderness/Wilderness Study Areas
2. Alternative 3A, 3B, and 3C Locations and Acreages
3. Cultural and Paleontological Survey Plan (Duke, 2016)

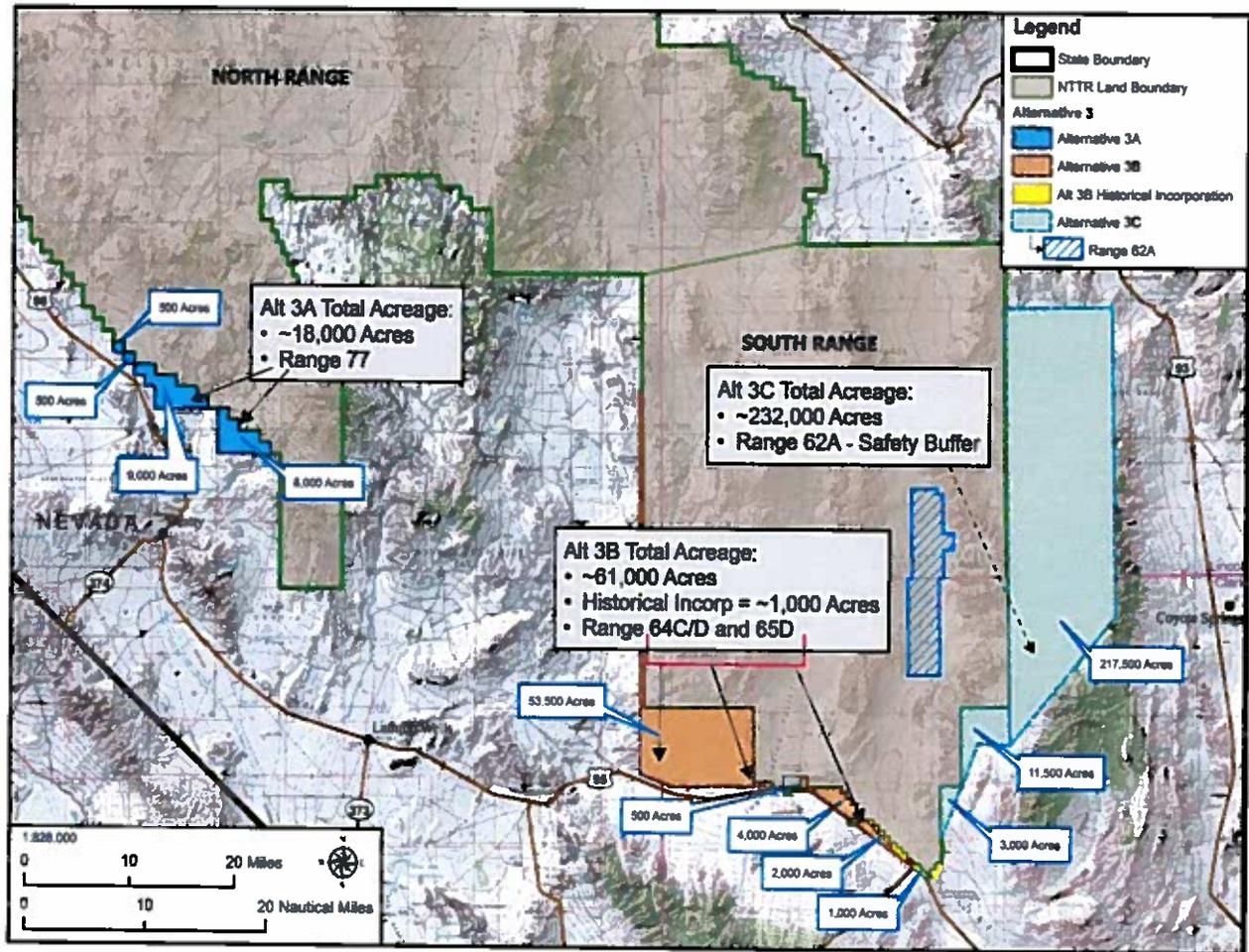
cc:

Mr. Michael Ackerman (AFCEC/CZN)

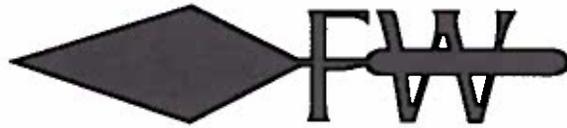
Mr. Skip Canfield (Nevada State Clearinghouse)



**Attachment 1 - Location of the NTTR, Population Centers, Roadway Infrastructure, and Wilderness/Wilderness Study Areas**



Attachment 2 - Alternative 3A, 3B, and 3C Locations and Acreages



# CULTURAL & PALEONTOLOGICAL RESOURCES SURVEY PLAN (DRAFT)

## NTTR Land Withdrawal Expansion Areas

*Submitted to:*

**Leidos  
Nellis Air Force Base  
Bureau of Land Management  
US Fish & Wildlife Service**

*Prepared by:*

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June 1, 2016

**Far Western Anthropological Research Group, Inc.**

**A leader in Cultural Resources Management since 1979**

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## Introduction

In this document, Far Western presents a random-sample survey plan for the expansion lands under consideration for withdrawal from US Fish & Wildlife Service (USFWS) and Bureau of Land Management (BLM) into the Nevada Test and Training Range (NTTR) footprint. Our approach is designed to assess the nature and density of both prehistoric and historic cultural resources.

The expansion lands under consideration are over 300,000 acres and thus best treated at the Legislative Environmental Impact Statement (LEIS) stage by a sample survey. Archaeologists from the cooperating federal agencies discussed a random sampling approach at the meeting on February 24, 2016, that would be driven by Section 110 of the National Historic Preservation Act (NHPA). This plan excludes any site-specific development needs that might be associated with the LEIS (e.g., emitter pads, landing fields, etc.)—and none have been identified as certain—which would be subject to 100 percent survey under Section 106 of the NHPA.

## Prehistoric Resources Probability Model and Survey Design

Here we present a general prehistoric sensitivity model for the expansion areas, as specifically requested by Nellis AFB. The purpose of the model is to provide a set of expectations from which to compare results of field surveys. We quantify the effectiveness of this model by comparing against existing survey data from NTTR. Finally, we propose a random-sample survey for the expansion areas. The results of the completed random-sample surveys can be used to create a more detailed, management-focused iteration of prehistoric site sensitivity for the expansion areas.

## Methods

The model was developed in a geographic information system (GIS), with all datasets projected to UTM NAD 83, Zone 11. All raster datasets used a 30-meter cell size. The model strata were defined using a combination of topographic, land-cover, and hydrography GIS datasets. For topography, we used 1-arc-second National Elevation Dataset tiles (USGS 2014). Slope was derived from the elevation data, then smoothed, and classified into lowland, upland, and steep-slope zones using breaks at six and 25 degrees. Finally, a majority filter was applied, which simplified the boundaries between zones and reassigned small islands of one or a few cells to the surrounding zone. Remote-sensing land cover data from the Nevada Gap Analysis Project (GAP; Utah State University 1997) was used to define areas bearing pinyon pine. All of the GAP land cover types containing pinyon were combined and then buffered to a 90-meter radius. A majority filter was then applied, to create a more contiguous zone and remove small islands.

Playas were defined using National Hydrography Dataset high-resolution data (USGS 2015), corresponding to lakebeds as depicted on 1:24,000 maps. These data were edited to

36 remove reservoirs and other man-made features. Only the larger playas, covering about 1  
37 square kilometer or more, were retained.

38 The topographic, land-cover and hydrography data were then combined to create the final  
39 model strata. A few combinations of cell values resulting from the overlay of these two datasets  
40 were grouped with others, for the sake of simplicity. The final six strata include *Lowlands*, *Playa*  
41 *Bottom*, *Uplands*, *Pinyon Uplands*, and *Steep Slopes* (Figure 1).

### 42 Sensitivity and Site-Density Estimates Derived from NTTR Data

43 The sensitivity of each stratum for prehistoric sites in the expansion areas is projected using  
44 existing survey data from NTTR. Previously recorded sites and survey areas on NTTR (and the  
45 expansion areas) are shown in Figure 2. To avoid sampling bias, we considered only the 1,914  
46 recorded sites within or immediately adjacent to surveyed areas, and corrected the observed  
47 site counts for each stratum against the overall amount of survey coverage falling within that  
48 stratum (Table 1). The result is an adjusted overall site-density figure for each model stratum,  
49 expressed as numbers of sites per 1,000 acres, which can be used to extrapolate to the model  
50 area as a whole. These site densities range from a low of 2.6 sites per 1,000 acres in the Steep  
51 Slopes stratum, to a high of 18.3 sites per 1,000 acres in the Pinyon Uplands stratum. Each  
52 stratum is assigned a sensitivity rank based on these values.

53 Table 1. Derivation of Site Density Estimates for Model Strata.

STRATUM	OVERALL NTTR ACREAGE	% OF TOTAL	SURVEYED NTTR ACREAGE	% OF TOTAL	% OF STRATUM SURVEYED	SITES ON SURVEYED LAND	SITE DENSITY (PER 1,000 SURVEYED ACRES)
Playa Bottom	4,5402	1.5	7,480	3.6	16.5	106	14.17
Lowlands	1,835,792	62.2	165,772	79.2	9.0	1,354	8.17
Uplands	805,112	27.3	22,009	10.5	2.7	216	9.81
Pinyon Uplands	164,995	5.6	12,857	6.1	7.8	235	18.28
Steep slopes	99,618	3.4	1,148	0.5	1.2	3	2.61
<b>Total</b>	<b>2,950,919</b>		<b>209,267</b>		<b>7.1</b>	<b>1,914</b>	<b>9.15</b>

54 Table 2 provides a more detailed analysis of the distribution of specific site types, and  
55 feature/artifact types, within each stratum. These site types and site constituents are drawn  
56 from a technical data summary for NTTR (Duke 2014). Each site count is accompanied by a  
57 standardized residual, which indicates whether the count is lower or higher than expected for  
58 that stratum. Negative values indicate that the site count is proportionally lower than the  
59 overall base-wide average, while positive values indicate that the count is proportionally  
60 higher. For example, the residual of 11.32 for ethnohistoric sites in the Pinyon Uplands indicates  
61 that these types are proportionally far more common in the pinyon zone than in the overall  
62 NTTR sample. These values can be interpreted like z-scores, so values between -1 and 1 are  
63 unlikely to be statistically significant. Many notable trends are apparent, but in general, the  
64 table shows that more complex site types are more common in the higher-sensitivity strata. This  
65



Figure 1. Model Strata within NTTR and the Expansion Areas.

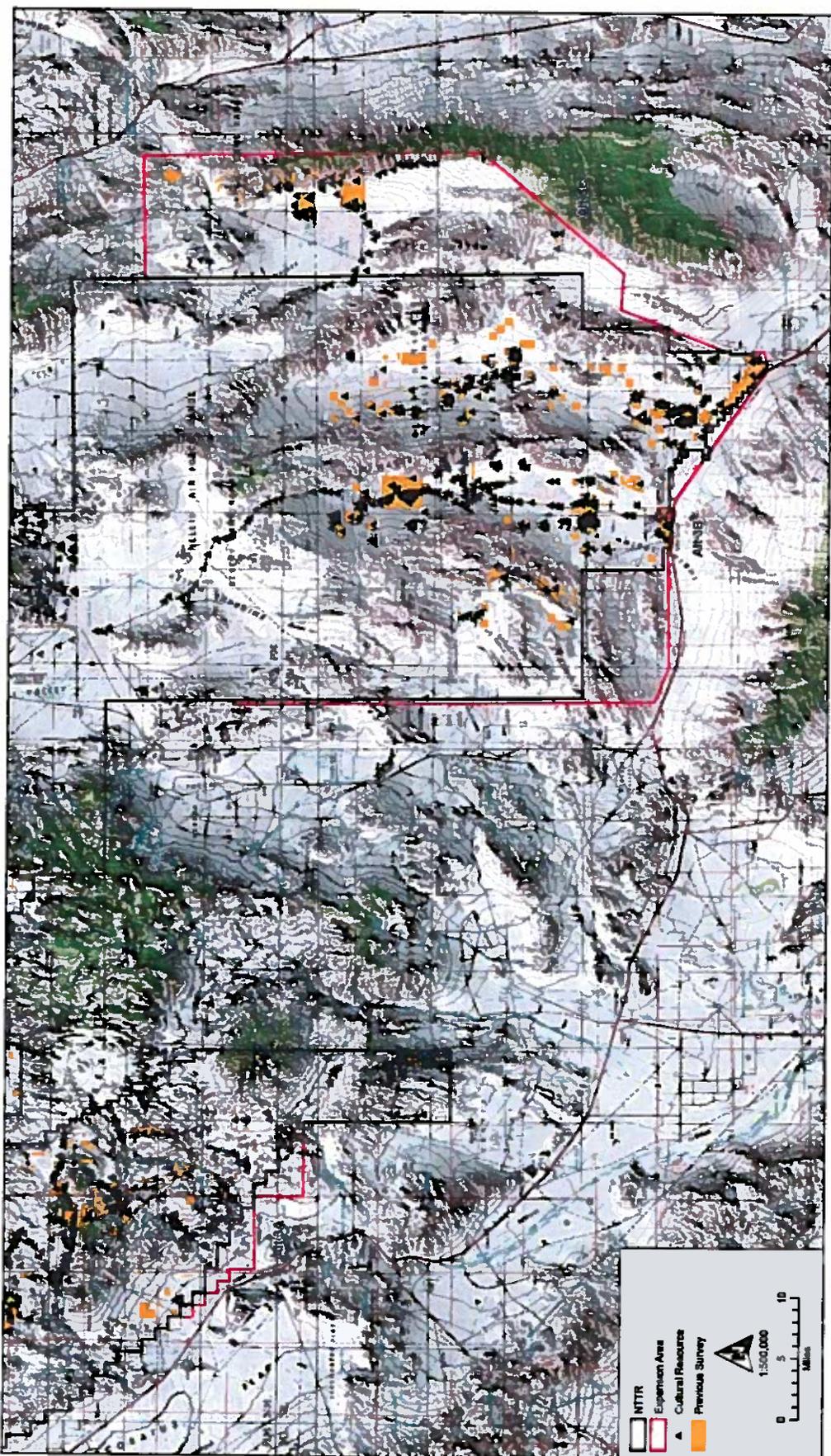


Figure 2. Result of Records Search for NTTR and Expansion Areas.

70 based on raw site counts could be easily extended in a future iteration of the model following  
 71 field surveys. Table 3 shows the distribution of different model strata and estimated site counts  
 72 for the expansion areas based on the NTTR data.

73 Table 2. Distribution of Site Types on NTTR by Model Stratum, with Standardized Residuals.

SITE TYPE	PLAYA BOTTOM		LOWLANDS		UPLANDS		PINYON UPLANDS		STEEP SLOPES		TOTAL
	N	STD RES	N	STD RES	N	STD RES	N	STD RES	N	STD RES	
<i>SITE TYPE</i>											
Complex Artifact	1	-0.20	6	-2.42	10	4.77	5	1.40	0	-0.19	22
Complex Feature	46	6.28	169	-4.57	54	2.55	69	4.24	1	0.64	339
Complex Flaked Stone	1	0.60	8	0.35	0	-1.06	1	-0.21	0	-0.13	10
Distinctive Artifact	0	-1.00	6	-1.89	4	1.38	8	3.89	0	-0.17	18
Distinctive Feature	1	-0.61	13	-2.14	19	7.92	0	-2.01	0	-0.23	33
Ethnohistoric	0	-1.49	4	-4.57	6	0.70	30	11.32	0	-0.25	40
Quarry/SRL	1	-2.78	155	2.88	18	-0.37	0	-4.62	0	-0.52	174
Simple Flaked Stone	44	-2.34	934	4.82	63	-5.70	85	-4.55	2	0.17	1,128
Simple Milling	12	2.71	46	-3.01	32	6.10	11	-0.40	0	-0.40	101
Simple Milling/Pottery	0	-1.00	4	-2.45	6	2.78	8	3.89	0	-0.17	18
Simple Pottery	0	-1.31	9	-2.76	4	0.27	18	7.28	0	-0.22	31
<b>Total</b>	<b>106</b>		<b>1,354</b>		<b>216</b>		<b>235</b>		<b>3</b>		<b>1,914</b>
<i>SITES CONTAINING...</i>											
Rock rings	0	-2.21	11	-6.50	9	-0.30	68	17.40	0	-0.37	88
Rock alignments/stacks	0	-1.51	11	-3.34	25	9.47	5	-0.02	0	-0.25	41
Rock art	0	-1.05	10	-1.10	10	5.15	0	-1.57	0	-0.18	20
<i>SITES CONTAINING DIAGNOSTIC MATERIAL FROM...</i>											
Paleoindian	2	-0.52	43	1.02	3	-1.18	4	-0.94	0	-0.29	52
Early Archaic	3	-0.18	36	-0.99	11	1.63	10	0.97	0	-0.31	60
Middle Archaic	3	-1.68	78	-1.99	16	0.11	41	5.84	0	-0.47	138
Late Archaic	1	-1.75	43	-2.44	8	-0.61	36	7.67	0	-0.37	88
Late Prehistoric	1	-2.17	24	-6.51	27	3.75	66	13.53	0	-0.43	118
Puebloan	1	-0.44	7	-2.88	9	3.29	11	4.08	0	-0.21	28
Ethnohistoric	0	-1.49	4	-4.57	6	0.70	30	11.32	0	-0.25	40

74 Table 3. Distribution of Model Strata and Projected Site Counts for the Expansion Areas.

STRATUM	SITE DENSITY PER 1,000 ACRE	ALT 3A		ALT 3B		ALT 3C		TOTAL	
		ACREAGE	PROJECTED SITE COUNT	ACREAGE	PROJECTED SITE COUNT	ACREAGE	PROJECTED SITE COUNT	ACREAGE	PROJECTED SITE COUNT
Playa Bottom	14.17	-	-	445	6	9,476	134	9,921	141
Lowlands	8.17	15,509	127	31,749	259	104,221	851	151,479	1,238
Uplands	9.81	2,427	24	25,592	251	85,545	840	113,564	1,115
Pinyon Uplands	18.28	-	-	-	-	4,748	87	4,748	87
Steep Slopes	2.61	-	-	3,227	8	27,663	72	30,889	81
<b>Total</b>	<b>-</b>	<b>17,937</b>	<b>151</b>	<b>61,012</b>	<b>525</b>	<b>231,653</b>	<b>1,984</b>	<b>310,601</b>	<b>2,660</b>

75

## Random-Sample Survey

76 To create sample survey units, we laid a grid of 500-x-500-meter cells over the expansion  
77 areas. This unit size was selected as the best balance between statistical robustness of the sample  
78 survey vs. the logistical challenge of surveying numerous widely separated blocks. A sample  
79 universe of 5,053 blocks was defined, consisting of every block lying entirely within the  
80 expansion areas (Figure 3; Table 4).

81 Each block was assigned to a single stratum, according to whichever model stratum was the  
82 most frequent within it. From this universe, we selected a six percent stratified random sample  
83 consisting of 227 blocks (14,024 acres), excluding the Steep Slopes stratum from consideration.  
84 This stratum is effectively unsurveyable at 25-plus-degree slopes; only three sites previously  
85 recorded on NTTR are located within this zone, and in our experience with sample surveys,  
86 such blocks are usually deemed unsafe by crew chiefs upon approaching them in the field.  
87 Portions of Steep Slope zones will be encountered and examined on survey blocks dominated  
88 by other strata, so this is a practical decision that leads to better sampling elsewhere while  
89 reducing wasted effort in the field. Crews are always mindful of checking rock outcrops and  
90 slope-break interfaces for rock writings, caves/rockshelters, caches, etc., as encountered during  
91 survey when accessible.

92

## Non-random Survey

93 An additional 1,000 acres targeting particular areas of interest will be surveyed at the  
94 conclusion of the random-sample survey. The non-random survey will allow us to investigate  
95 areas of interest that were observed outside of survey blocks during the random-sample survey.  
96 Also, areas may be defined by Native American tribes, Air Force, BLM, and/or USFWS that merit  
97 formal survey. The survey areas will be selected using blocks from the sample grid unless they  
98 must otherwise be defined (e.g., canyons, outcrop-fan interfaces, playa margins, etc.).

99

## Historic Resources Probability and Survey Design

100 The historic archaeological record on NTTR is not extensive, equating to 13% of the total  
101 cultural resources that have been recorded. Of the 2,889 resources known, 364 are either  
102 historic-only (n=183) or multi-component with prehistoric resources (n=181). Historic-period  
103 use of NTTR lands was limited by lack of extensive ore deposits for mining, substantial water  
104 sources for ranching and agriculture, and primary travel routes; however, sites related to each  
105 of these themes are present, so they are crucial to understanding regional patterns regardless.  
106 Many important historic places are located in the areas surrounding NTTR and the proposed  
107 expansion lands. Of course, military history is also highly pertinent in the area, especially to the  
108 extent it may occur in the expansion lands.

109 Of particular note is a relatively abundant and well-preserved ethnohistoric record. This  
110 aspect of the record is noteworthy for its nature and timing relative to historic activities outside  
111 of NTTR proper. For example, ethnohistoric-era pinyon harvesting took place well into the  
112

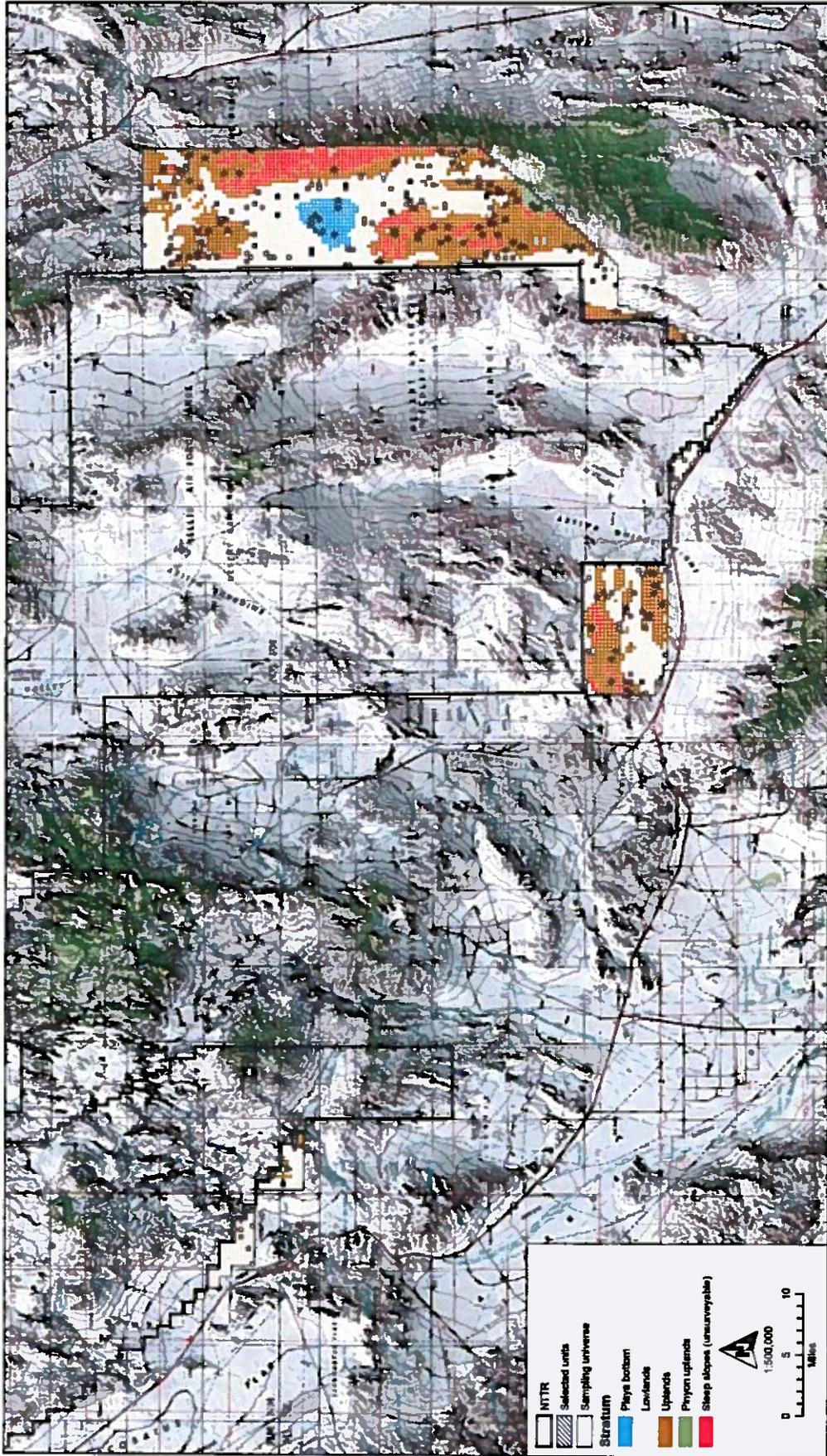


Figure 3. Sample Grid and Randomly Selected Survey Blocks in the Expansion Areas.

115

Table 4. Proposed Random-Sample Survey Blocks by Expansion Area.

STRATUM	ALT 3A			ALT 3B			ALT 3C			TOTAL		
	ALL	SELECTED	% OF TOTAL	ALL	SELECTED	% OF TOTAL	ALL	SELECTED	% OF TOTAL	ALL	SELECTED	% OF TOTAL
Playa Bottom	-	-	-	-	-	-	157	9	5.7	157	9	5.7
Lowland	196	10	5.1	387	21	5.4	1,589	86	5.4	2,172	117	5.4
Uplands	27	2	7.4	373	20	5.4	1,366	76	5.6	1,766	98	5.5
Pinyon Uplands	-	-	-	-	-	-	47	3	6.4	47	3	6.4
Steep Slopes	-	-	-	43	-	-	406	-	-	449	-	-
<b>Total (no Steep Slopes)</b>	<b>223</b>	<b>12</b>	<b>5.4</b>	<b>760</b>	<b>41</b>	<b>5.4</b>	<b>3,159</b>	<b>174</b>	<b>5.5</b>	<b>4,142</b>	<b>227</b>	<b>5.5</b>

116 twentieth century precisely because the Belted and Kawich mountain ranges could still be  
 117 exploited in a traditional manner away from primary Euroamerican activities elsewhere, such  
 118 as in Goldfield, where Native American people could sell pine nuts. Of the 364 historic-era sites  
 119 on NTTR, 51 are defined as ethnohistoric (Duke 2014). These track closely with the Late  
 120 Prehistoric record of the pinyon zone, and they are included in the already discussed model.

121 The random sample survey proposed above will also provide appropriate coverage for  
 122 assessing historic resources. The survey design stratifies the landscape but does not target  
 123 certain strata differentially. Should findings of historic and/or ethnohistoric resources suggest  
 124 further potential of note, some of the above-mentioned non-random acreage will be applied.

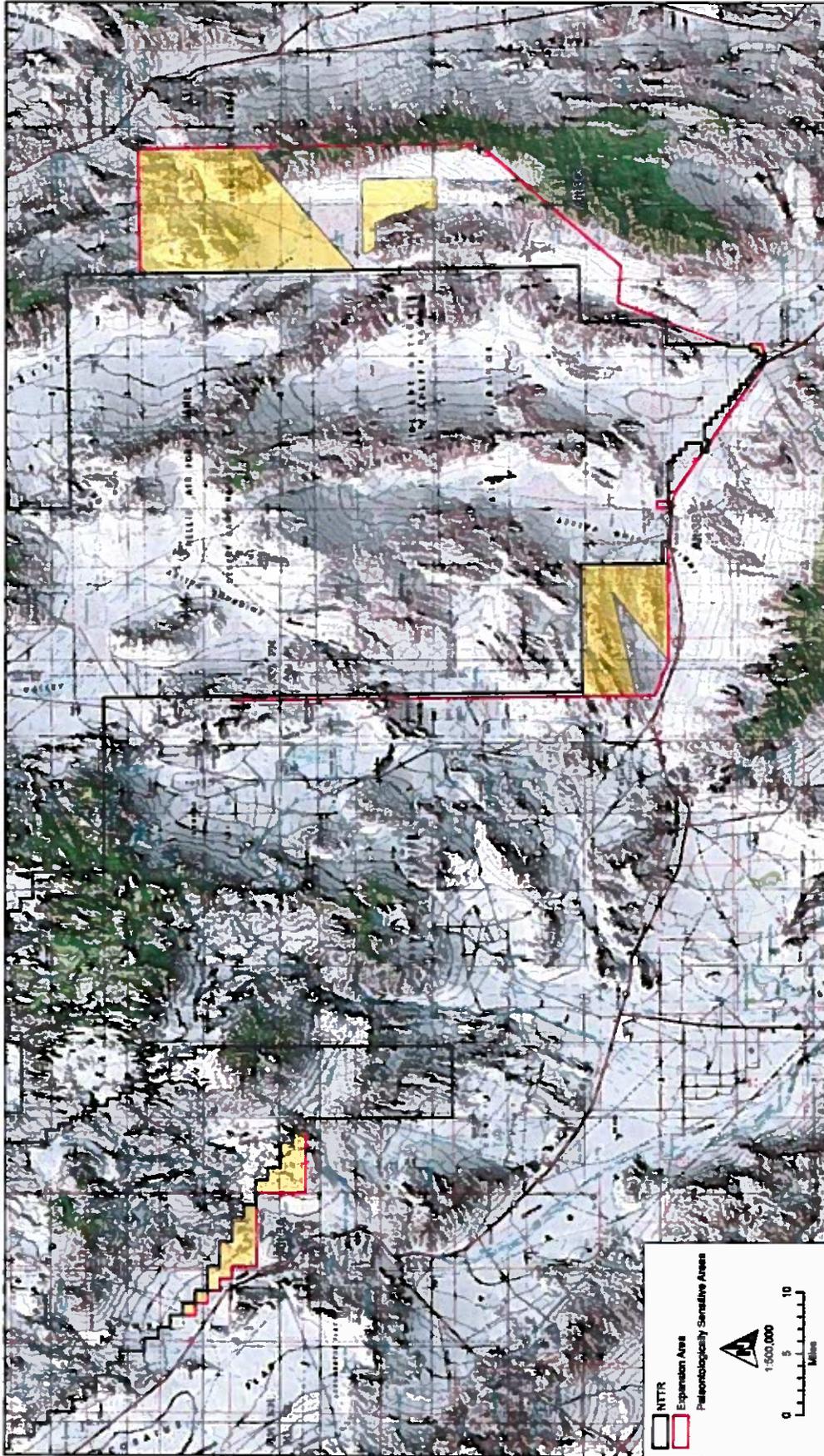
125

### Paleontological Survey Design

126 The paleontological records search has determined those areas with highest interest and  
 127 sensitivity (Figure 4). Records or references to numerous Paleozoic invertebrate fossil localities in  
 128 stratigraphic units are known within expansion lands. These include such fossils as trilobites,  
 129 clams, snails, corals, etc., all of which are of lesser importance than vertebrates. Thus far in our pre-  
 130 field research, the only references to Paleozoic vertebrate and plant fossil remains we have found  
 131 are references to fossil fish and plant remains from Carboniferous (Mississippian) black shales.  
 132 During the field survey, we will examine the Carboniferous black shales located in the southern  
 133 Sheep Range within the Alt 3C area to determine if they contain important vertebrate fossils.

134 Mesozoic strata are not present in any of the proposed expansion areas. Cenozoic strata are  
 135 present primarily in the foothills of the ranges and in the valley bottoms. However, these  
 136 Cenozoic rocks are largely volcanic in origin, although they contain some fluvial (stream) and  
 137 lacustrine (lake) sediments. The latter have produced fossils of Miocene fish within the NTTR,  
 138 along with invertebrates (clams and snails). These potentially fossiliferous Cenozoic rocks are  
 139 exposed in the Alt 3C area and will also need to be examined as part of our field survey to  
 140 determine if they contain significant fossils.

141 Lastly, we have discussed with paleontologists from the U. S. Geological Survey and  
 142 University of Nevada at Las Vegas the potential for Tule Springs-type Quaternary vertebrate  
 143



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Figure 4. Paleontologically Sensitive Areas in the Expansion Areas.

146 fossils to be found in the valleys of the Alt 3C area. There is a consensus that it is reasonable to  
147 expect that fossil spring deposits similar to those at Tule Springs and Corn Creek Springs might  
148 be present. Consequently, during field survey we will examine Quaternary sediments found in  
149 the valleys of the Alt 3C area for similar fossil spring deposits.

150 In summary, our paleontological resource sensitivity assessment indicates that the primary  
151 area of interest in our search for significant fossil localities is the Alt 3C area. In the field, we will  
152 examine the Mississippian black shales for fossil fish and plant remains, the lacustrine and  
153 fluvial facies of the Miocene volcanics for fossil vertebrates and invertebrates, and Quaternary  
154 sediments for potential fossil spring deposits similar to those found at Tule Springs and Corn  
155 Creek Springs.

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