

CALICO RESOURCES USA CORP.  
GRASSY MOUNTAIN MINE PROJECT  
MALHEUR COUNTY, OREGON

**AREAS OF CRITICAL ENVIRONMENTAL CONCERN  
/RESEARCH NATURAL AREAS  
BASELINE REPORT**

MAY 2018

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## LIST OF ABBREVIATIONS AND ACRONYMS

ACEC	Area of Critical Environmental Concern
BLM	Bureau of Land Management
FLPMA	Federal Land Policy and Management Act of 1976
MRA	Malheur Resource Area
Project	Grassy Mountain Mine Project
RNA	Research Natural Area
SEORMP	Southeast Oregon Resource Management Plan
U.S.C.	United States Code

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## **1 INTRODUCTION**

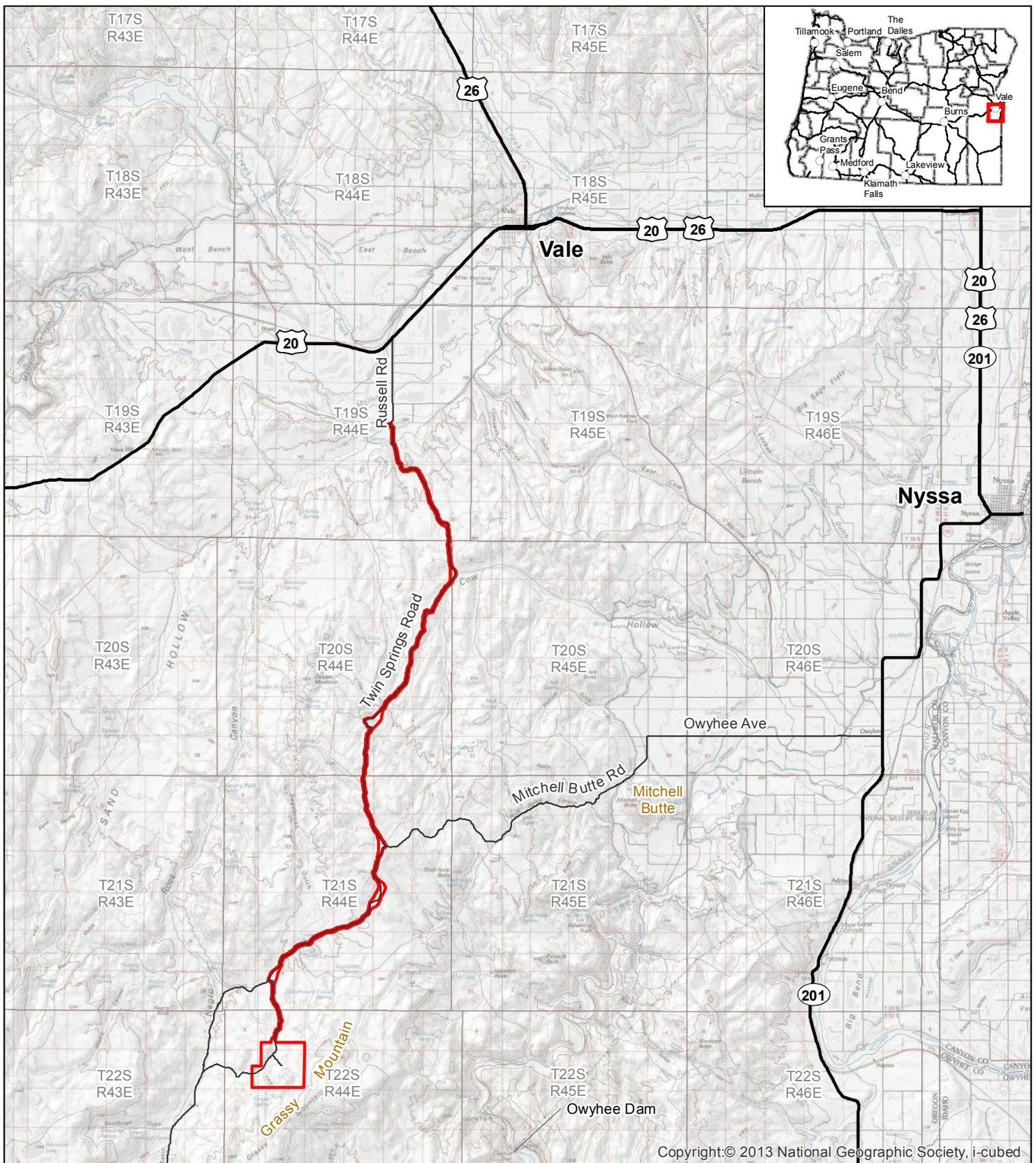
The purpose of the Areas of Critical Environmental Concern (ACECs)/Research Natural Areas (RNAs) baseline study is to document any ACECs, as defined in 43 United States Code (U.S.C.) 1702, or RNAs near the Grassy Mountain Mine Project (Project). This baseline report will be included in the Consolidated Permit Application (Oregon Administrative Rule 632-037-0055) submitted to the Oregon Department of Geology and Mineral Industries.

## **2 RESOURCE STUDY AREA**

The Project is located in Malheur County, Oregon, approximately 22 miles south-southwest of Vale (Figure 1) and consists of two areas: the Mine and Process Area and the Access Road Area (Permit Area) (Figure 2).

The Mine and Process Area is located on three patented lode mining claims and unpatented lode mining claims that cover an estimated 886 acres. These patented and unpatented lode mining claims are part of a larger land position that includes 419 unpatented lode mining claims and nine mill site claims on lands administered by the Bureau of Land Management (BLM) (Figure 2). All proposed mining would occur on the patented claims, with some mine facilities on unpatented claims. The Mine and Process Area is in all or portions of Sections 5 through 8, Township 22 South, Range 44 East (T22S, R44E) (Willamette Meridian).

The Access Road Area is located on public land administered by the BLM, and private land controlled by others (Figure 2). A portion of the Access Road Area is a Malheur County Road named Twin Springs Road. The Access Road Area extends north from the Mine and Process Area to Russell Road, a paved Malheur County Road. The Access Road Area is in portions of Section 5, T22S, R44E, Sections 3, 10, 11, 14, 15, 21 through 23, 28, 29, and 32, T21S, R44E, Sections 1, 12 through 14, 23, 26, 27, and 34, T20S, R44E, Sections 6 and 7, T20S, R45E, and Sections 22, 23, 26, 35, and 36, T19S, R44E (Willamette Meridian). The width of the Access Road Area is 300 feet (150 feet on either side of the access road centerline) to accommodate possible minor widening or re-routing, and a potential powerline adjacent to the access road. There are several areas shown that are significantly wider than 300 feet on the Permit Area Map (Figure 2), which are areas where the final alignment has not yet been determined. The final engineering of the road will be consistent throughout, and within the Permit Area. The Access Road Area also includes a buffer on either side of the proposed road width for the collection of environmental baseline data. The road corridor will be 40 feet wide, which includes a 24-foot wide road travel width (12 feet on either side of the road centerline), four-foot wide shoulders on each side of the road, minimum one-foot wide ditches on each side of the road, and appropriate cut and fill. The Access Road Area totals approximately 876 acres.

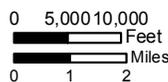


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**Explanation**

- Permit Area
- Existing Road

Projection: UTM Zone 11 North, NAD83, meters



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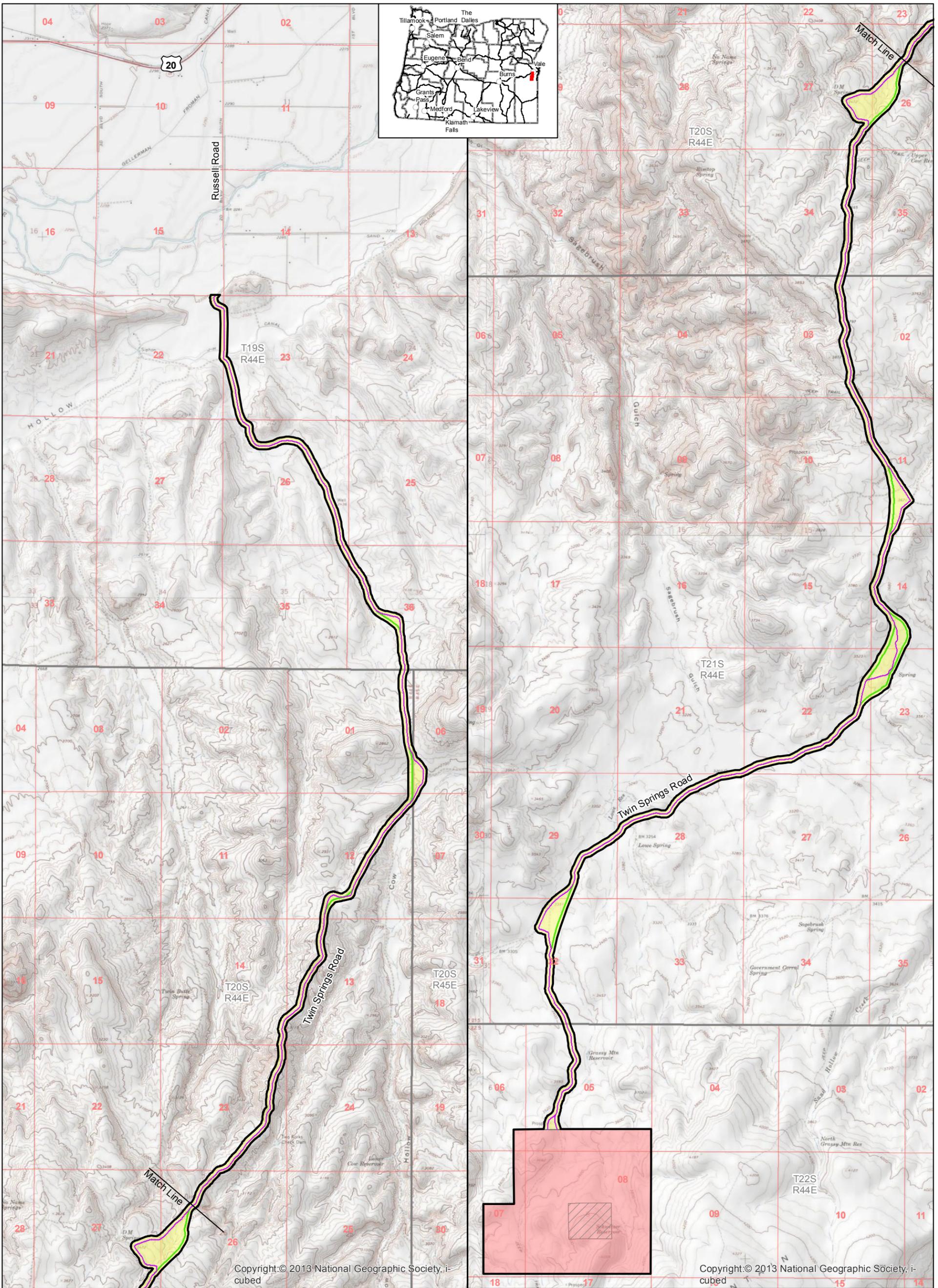
**GRASSY MOUNTAIN MINE PROJECT**

**Location Map**

Figure 1

Date: 12/19/2017	Drawn By: JDB
Revised:	Project No.: 3672
Base Map: USGS 100K quads: Boise, Brogan, Vale, Weiser	
File Name: 3672G_GrassyMtn_BL_Fig01_Location.mxd	





<b>Explanation</b> Permit Area Mine and Process Area Access Road Area Patented Lode Claims Proposed Access Road Possible Road Realignment		<b>CALICO RESOURCES USA CORP.</b> GRASSY MOUNTAIN MINE PROJECT Permit Area Map Figure 2							
Projection: UTM Zone 11 North, NAD83, meters				<table border="1"> <tr> <td>Date: 12/19/2017</td> <td>Drawn By: JDB</td> </tr> <tr> <td>Revised:</td> <td>Project No.: 3672</td> </tr> <tr> <td colspan="2"> <small>Users: F:\Quality\Visual\MapInfo\GrassyMountain_KateSpring.mxd            Base Map: Sourdough Spring, Vale West            File Name: 3672G_GrassyMtn_BL_Fig02_PermitArea.mxd</small> </td> </tr> </table>		Date: 12/19/2017	Drawn By: JDB	Revised:	Project No.: 3672
Date: 12/19/2017	Drawn By: JDB								
Revised:	Project No.: 3672								
<small>Users: F:\Quality\Visual\MapInfo\GrassyMountain_KateSpring.mxd            Base Map: Sourdough Spring, Vale West            File Name: 3672G_GrassyMtn_BL_Fig02_PermitArea.mxd</small>									

## **3 REGULATORY FRAMEWORK**

### **3.1 Federal**

#### **3.1.1 Federal Land Policy and Management Act of 1976**

The Federal Land Policy and Management Act of 1976 (FLPMA), as amended, defines the term ACEC as “areas within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards” (43 U.S.C. 1702).

#### **3.1.2 Bureau of Land Management**

The BLM also designates RNAs to “preserve examples of significant ecosystems and provide opportunities for education, research, and collection of baseline data in relatively unaltered natural communities” (BLM 2018). BLM Manual 1613 – Areas of Critical Environmental Concern, states that RNAs are considered designated ACECs.

##### **3.1.2.1 Southeastern Oregon Resource Management Plan**

The BLM’s 2002 Southeastern Oregon Resource Management Plan and Record of Decision (SEORMP) provides the Vale District with a comprehensive framework for managing 4.5 million acres of public land administered as the Malheur Resource Area (MRA) and Jordan Resource Area. The SEORMP addresses land in Malheur, Grant, and Harney Counties in a larger 6.5 million-acre planning area that contains private land and land managed by the State of Oregon. The purpose of the SEORMP is to ensure that public land is managed for multiple use and sustained yield in accordance with the FLPMA. The Permit Area is in the MRA.

## **4 STUDY METHODOLOGY**

### **4.1 Literature Review**

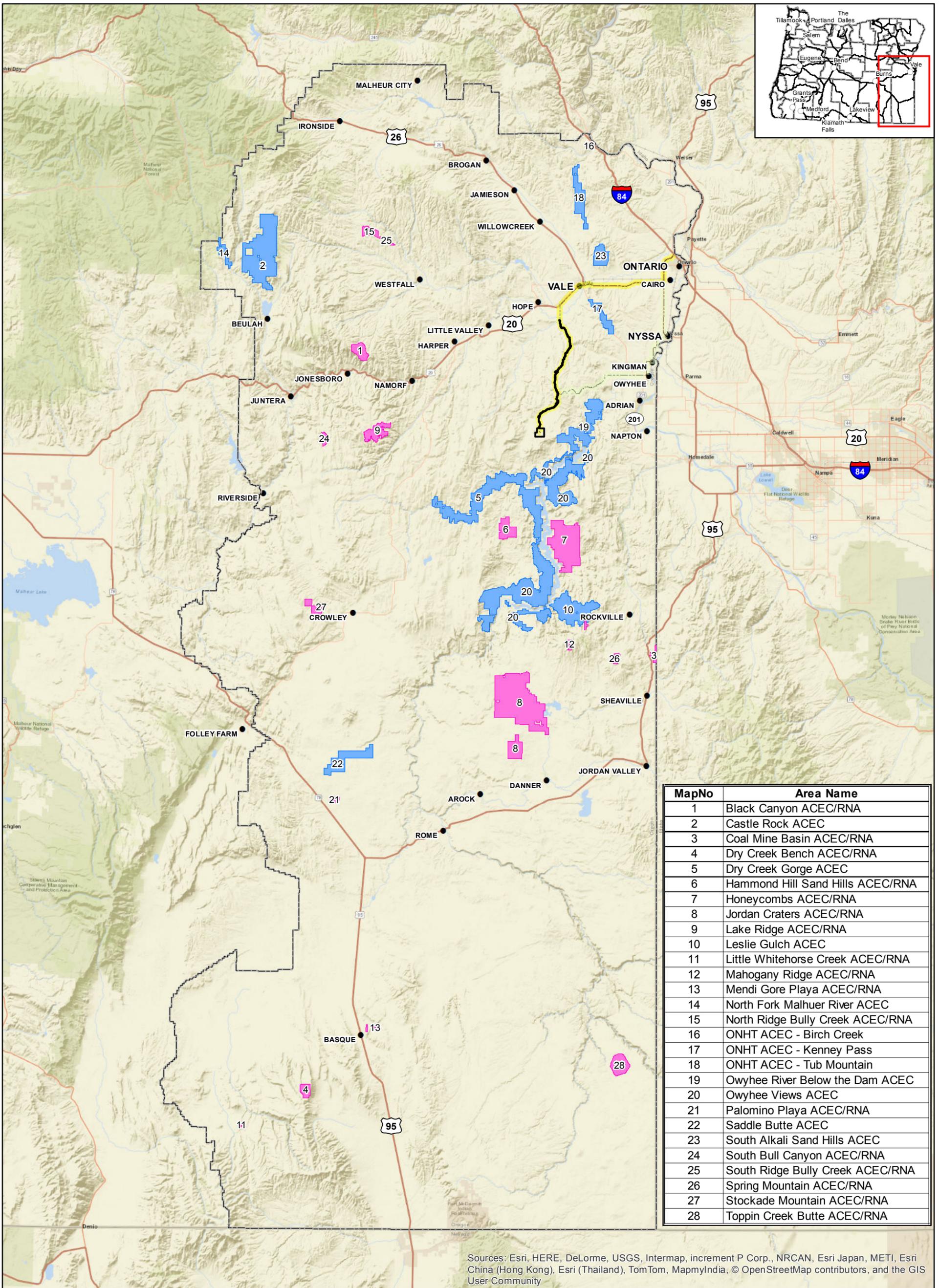
The baseline characterization outlined in this report has been taken from a list and maps in the SEORMP identifying the ACECs/RNAS and ACECs in the MRA (BLM 2002).

### **4.2 Field Studies**

Field studies were not necessary for this baseline study per the *Environmental Baseline Study Work Plans* (EM Strategies, Inc. 2017).

## **5 BASELINE CHARACTERIZATION**

The SEORMP identifies 17 combined ACECs/RNAS and 11 ACECs in the MRA. These are shown on Figure 3 and listed in Table 1. There are no ACECs or ACECs/RNAS in the Permit Area. The closest ACEC or ACEC/RNA is the Owyhee River Below the Dam ACEC.



MapNo	Area Name
1	Black Canyon ACEC/RNA
2	Castle Rock ACEC
3	Coal Mine Basin ACEC/RNA
4	Dry Creek Bench ACEC/RNA
5	Dry Creek Gorge ACEC
6	Hammond Hill Sand Hills ACEC/RNA
7	Honeycombs ACEC/RNA
8	Jordan Craters ACEC/RNA
9	Lake Ridge ACEC/RNA
10	Leslie Gulch ACEC
11	Little Whitehorse Creek ACEC/RNA
12	Mahogany Ridge ACEC/RNA
13	Mendi Gore Playa ACEC/RNA
14	North Fork Malheur River ACEC
15	North Ridge Bully Creek ACEC/RNA
16	ONHT ACEC - Birch Creek
17	ONHT ACEC - Kenney Pass
18	ONHT ACEC - Tub Mountain
19	Owyhee River Below the Dam ACEC
20	Owyhee Views ACEC
21	Palomino Playa ACEC/RNA
22	Saddle Butte ACEC
23	South Alkali Sand Hills ACEC
24	South Bull Canyon ACEC/RNA
25	South Ridge Bully Creek ACEC/RNA
26	Spring Mountain ACEC/RNA
27	Stockade Mountain ACEC/RNA
28	Toppin Creek Butte ACEC/RNA

Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

**Explanation**

- Permit Area
- Main Access Road
- Emergency Access Road
- Malheur Resource Area

**Areas of Environmental Concern / Research Natural Areas**

- ACEC
- ACEC/RNA

Projection: UTM Zone 11 North, NAD83, meters



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**GRASSY MOUNTAIN MINE PROJECT**

**Areas of Critical Environmental Concern in the Malheur Resource Area**

Figure 3

Date:	05/17/2018	Drawn By:	JDB/GSL
Revised:		Project No.:	3672
Base Map:			
File Name:	3672GX_GrassyMtn_BL_ACEC_Fig3_ACEC.mxd		



**Table 1: Areas of Critical Environmental Concern in the Malheur Resource Area**

ACEC	Size (acres)	Primary Resource Value/Description
Black Canyon ACEC/RNA	2,644	Vegetation cells – stiff sagebrush/Sandberg bluegrass, western juniper/big sagebrush/bluebunch wheatgrass, riparian community dominated by coyote willow with Pacific willow, and first to third order stream system in sagebrush zone
Castle Rock ACEC	23,799	Scenic, cultural, historic, and wildlife habitat
Coal Mine Basin ACEC/RNA	755	Two special status plant species, ash communities, and paleontological resources
Dry Creek Bench ACEC/RNA	1,616	Mountain mahogany/whortleleaf snowberry/Idaho fescue and mountain mahogany/big sagebrush/Idaho fescue Basin and Range province
Dry Creek Gorge ACEC	16,082	Scenery, special status fish (redband trout) and amphibian species (Columbia spotted frog) and associated habitat, and rare geologic features
Hammond Hill Sand Hills ACEC/RNA	3,712	Big sagebrush-antelope bitterbrush/Indian ricegrass and big sagebrush-greasewood/Indian ricegrass
Honeycombs ACEC/RNA	15,847	Vegetation community types, including big sagebrush/needle and thread grass on cinders; special status plants; special status bighorn sheep and habitat; scenic geology
Jordan Craters ACEC/RNA	31,370	Historic, cultural, and scenic values; special status plants; vegetation community type of big sagebrush/bluebunch wheatgrass; outstanding geologic features of recent lava flows; relict vegetation sites; wildlife habitat including high-quality riparian areas; natural hazards from collapsed lava pits and contraction cracks
Lake Ridge ACEC/RNA	3,825	Low sagebrush/bluebunch wheatgrass community and low sagebrush/Idaho fescue community vegetation cells; sage grouse and several leks
Leslie Gulch ACEC	11,673	Scenic geology; special status plants; special status bighorn sheep and habitat
Little Whitehorse Creek ACEC/RNA	58	Vegetation cells; first to third order stream, high gradient reach, in sagebrush zone, with mountain alder and redosier dogwood; riparian community dominated by mountain alder and redosier dogwood, with potential black cottonwood and riparian community dominated by Pacific willow and Wood’s rose; presence of Lahontan cutthroat trout, a federally-listed species
Mahogany Ridge ACEC/RNA	682	Neotropical migratory bird habitat; vegetation community type of mountain mahogany-big sagebrush; special status plant
Mendi Gore Playa ACEC/RNA	148	Winterfat community and a small area representing a black sagebrush community
North Fork Malheur River ACEC	1,810	Scenery; two special status fish and their habitat; a special status amphibian and habitat
North Ridge Bully Creek ACEC/RNA	1,569	Big sagebrush/Thurber needlegrass community and big sagebrush-threetip sagebrush/Idaho fescue community; sage grouse and their associated habitat
Oregon National Historic Trail ACEC – Birch Creek Segment	119	Historic and scenic

<b>ACEC</b>	<b>Size (acres)</b>	<b>Primary Resource Value/Description</b>
Oregon National Historic Trail ACEC – Kenney Pass Segment	3,154	Historic; scenic; a special status plant species, Cronquist’s stickseed.
Oregon National Historic Trail ACEC – Tub Mountain Segment	5,902	Historic; cultural; scenic
Owyhee River Below the Dam ACEC	11,239	High scenic values of diverse landscape elements in a substantially natural setting; a special status plant species (Mulford’s milkvetch); the rare presence of a black cottonwood gallery in a riverine system; the combined wildlife values of diverse habitat types supporting a large number of wildlife species and an important migratory corridor for neotropical birds.
Owyhee Views ACEC	52,506	High scenic properties associated with the area’s virtually unaltered landscape; special status bighorn sheep and habitat; special status plant species (Sterile milkvetch, Ertter’s senecio, and Owyhee clover). Another special status plant species (Cusick’s chaenactis) is suspected to grow in the area.
Palomino Playa ACEC/RNA	642	Shadscale saltbush/bunchgrass, black greasewood/bunchgrass community mosaic and bare playa; special status plant species, Davis’ peppergrass
Saddle Butte ACEC	7,056	Special status western big-eared bats and habitat, high quality lava tube caves; hazardous conditions due to cave instability
South Alkali Sand Hills ACEC	3,520	Special status plant species and their habitat.
South Bull Canyon ACEC/RNA	792	Big sagebrush-antelope bitterbrush/Idaho fescue
South Ridge Bully Creek ACEC/RNA	620	Big sagebrush/Thurber needlegrass community and big sagebrush-squaw apple/Idaho fescue community vegetation cell; sage grouse, loggerhead shrikes, and their associated habitat.
Spring Mountain ACEC/RNA	1,002	Mountain big sagebrush/Idaho fescue, low sagebrush/bluebunch wheatgrass, and riparian community dominated by peachleaf willow and coyote willow with quaking aspen/whortleleaf snowberry; quaking aspen patches associated with springs and north-facing talus slopes
Stockade Mountain ACEC/RNA	1,767	Vegetation community type of western juniper/big sagebrush plus potential low sagebrush/Sandberg bluegrass type; wildlife habitat
Toppin Creek Butte ACEC/RNA	3,996	Low sagebrush/bluebunch wheatgrass community in excellent condition and low sagebrush/Idaho fescue plant community vegetation cells identified by the Oregon Natural Heritage Program. These plant communities will be specially managed for future research. Also identified as relevant and important values are sage grouse and associated habitat for neotropical bird migration

Source: BLM 2002

## 6 BIBLIOGRAPHY

Bureau of Land Management (BLM). 2002. *Southeastern Oregon Resource Management Plan and Record of Decision*. September 2002.

\_\_\_\_\_. 2018. *Natural Resources, Native Plant Communities, Rare and Cultural Plant Conservation*. <https://www.blm.gov/programs/natural-resources/native-plant-communities/rare-and-cultural-plant-conservation>. Accessed May 2, 2018.

EM Strategies, Inc. 2017. *Environmental Baseline Study Work Plans, Grassy Mountain Project*. September 2017.

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