

Exhibit J
Wildlife Monitoring Report

**Wildlife Monitoring for Exploration Activity in the
Marys River Project Area
Elko County, Nevada
2012**



Report Prepared for:

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Elko District Office
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INTRODUCTION

Noble Energy, Inc. will be implementing an exploration project within the Marys River Project Area in Elko County, Nevada. Approximately one half of the Project Area will be within lands managed by the Bureau of Land Management (BLM) – Elko District Field Office. Hayden-Wing Associates, LLC (HWA) conducted preliminary surveys for wildlife species of management concern to the Elko District Field Office during Spring 2012.

Species of management concern were determined through a series of emails, telephone calls and discussions with the BLM – Elko District Field Office. The BLM – Elko District Field Office directed wildlife surveys in the Marys River Exploration Project Area for the following species: pygmy rabbits (*Brachylagus idahoensis*), greater sage-grouse (*Centrocercus urophasianus*), Columbia spotted frog (*Rana luteiventris*), Elko whitlowcress (*Draba sphaeroides*), and nesting raptor species including burrowing owls (*Athene cunicularia*). These species were determined by the BLM based on available information and habitat in the Marys River Exploration Project Area. Monitoring aims to identify and maintain existing wildlife habitats throughout the Elko District Field Office and to comply with the Endangered Species Act, Bald and Golden Eagle Protection Act, and Migratory Bird Treaty Act. In addition to the above Acts, the burrowing owl, golden eagle (*Aquila chrysaetos*), short-eared owl (*Asio flammeus*), long-eared owl (*Asio otus*), and Swainson's hawk (*Buteo swainsoni*) are on the BLM Sensitive Species List for the State Office of Nevada. The bald eagle (*Haliaeetus leucocephalus*), burrowing owl, and pygmy rabbit are also U. S. Fish and Wildlife Service (USFWS) Species of Concern. The Columbia spotted frog (*Rana luteiventris*) is a Candidate Species in Nevada under the USFWS (USFWS 2011) and was considered for surveys in the Marys River Project Area. The Elko whitlowcress is a species that is currently on the Nevada Native Plant Society *Watch List* and is potentially vulnerable to becoming threatened or endangered (NNHP 2012).

PROJECT AREA

The Marys River Exploration Project Area includes Sections 1, 2, 11–14, and 23–26 T38N:R60E; Sections 2–11, 14–23, and 26–35 T38N:R61E; Sections 23–26, 35, and 36 T39N:R60E; and Sections 19–23 and 26–35 T39N:R61E. The southeastern corner of the Project Area is approximately four miles northwest of Wells, Nevada. The Project Area includes approximately 39,366 acres that includes 52% federal (BLM) and 48% private lands (Map 1). The Humboldt River and Bishop Creek bisect the Project Area. These riparian zones do not provide cottonwood stands (*Populus* spp.) for potential nesting structures for raptors, however there are isolated cottonwoods near ranch houses in the far northeastern portion of the Project Area. Elevation within the Project Area ranges from 5,300 to 5,700 feet above sea level. Topography is relatively flat with rolling hills, many drainages, hilltops, draws, and eroded hillsides. Vegetation is primarily comprised of Wyoming big sagebrush (*Artemisia tridentata wyomingensis*) stands with numerous areas dominated with rabbitbrush (*Chrysothamnus* spp.) and dead sagebrush. Areas of big basin sage (*A. tridentata tridentata*), mixed desert shrub, riparian woodland (mainly willows; *Salix* spp.), and irrigated cropland occur scattered throughout the Project Area. Cheatgrass (*Bromus tectorum*) is prevalent in many areas of the Project Area, and crested wheat grass (*Agropyron cristatum*) was recorded in several areas.



METHODS

HWA biologists navigated and collected data using Trimble Juno[®] handheld GPS receivers installed with ArcPad[®] 10 mobile GIS software. All spatial data described in this report were recorded in Universal Transverse Mercator (UTM) coordinates using NAD 83 Zone 11 datum and ArcGIS[®] 10 software to generate maps and conduct spatial analyses. Surveys were conducted by HWA from March 1 – April 15, 2012.

HWA completed BLM-approved block surveys for wildlife and vegetation by surveying 300-meter wide transects oriented north to south throughout the entire Project Area (Appendix A). Transects were surveyed for wildlife and vegetation by using ATVs. When potential habitat was found, this area was then surveyed by foot and waypoints were recorded. Field crews consisted of four experienced biologists. Proposed well pads and access roads were surveyed more extensively for wildlife and vegetation with 50-Project Area transect spacing.

Prior to surveys, Noble Energy agreed to avoid any perennial wet areas by 100 feet to prevent disturbance to amphibians and areas susceptible to erosion. HWA surveyed all BLM lands and private lands where landowner permission was obtained within the Project Area.

Vegetation

The Elko whitlowcress (*Draba sphaeroides*) is a species that is currently on the Nevada Native Plant Society *Watch List* and is potentially vulnerable to becoming threatened or endangered (NNHP 2012). This species is endemic to Nevada and the only known observations of this species were located within Elko County. The Nevada Natural Heritage Program recorded a sighting of the Elko whitlowcress near the Humboldt Mountain foothills in 1985, which is six miles south of the Project Area. We surveyed this area to document the habitat surrounding the observation point and to compare this area with the available habitat in the Marys River Exploration Project Area. Noxious weeds such as scotch thistle (*Onopordum acanthium*), hoary cress (*Cardaria draba*), perennial pepperweed (*Lepidium latifolium*), Russian knapweed (*Centaurea repens*), and leafy spurge (*Euphorbia esula*) were recorded as they were opportunistically found.

Vegetation types within the Project Area were digitized from 2009 National Agriculture Imagery Program (NAIP) aerial images prior to field work. Digitized polygons were groundtruthed in the field by collecting waypoints throughout the Project Area. Vegetation types were recorded at each point. Changes to the vegetation type polygons were then digitized and finalized in the office. Any observations of noxious weeds or invasive species were documented as they were encountered during surveys in the Project Area.

Columbia Spotted Frog

The Columbia spotted frog has the potential to occur in the Humboldt River drainage that crosses the southern portion of the Project Area. Prior to surveys, Noble Energy agreed to avoid any

perennial wet areas by 100 feet to prevent disturbance to this species. Because disturbance activities would avoid cold permanent water habitats, and marshy edges of ponds and rivers, surveys for the Columbian spotted frog were not required.

Pygmy Rabbit

During 2011, high concentrations of pygmy rabbits were found during the construction/onsite surveys of the Tetuan well in Section 26 T38N:R61E. This led BLM biologists to anticipate a large number of pygmy rabbits in the Marys River Exploration Project Area, especially the southern portion. HWA prepared a protocol for presence/absence surveys for a block survey of the Project Area based on previous work with pygmy rabbits in Wyoming. HWA surveyed all BLM and private lands with landowner permission within the project area.

HWA completed block surveys for active pygmy rabbit burrows by surveying 300-meter wide transects oriented north to south throughout the Project Area. Transects were surveyed for potential habitat by using ATVs. When potential habitat was found, this area was surveyed by foot for evidence indicating the presence of pygmy rabbits. Evidence of pygmy rabbits included: sightings, burrows, pellets, and tracks. The goal was for complete visual coverage of the survey area with additional searching necessary in areas where topography prevented full visual coverage. Non-habitat, such as riparian areas or burned areas lacking sagebrush, was excluded. Patches were extensively searched by beginning with the highest quality habitat nearest the transect line and then moving away from the transect line. The objective was to find active burrows (indicated by open burrows with recent pellets present in or near the opening) or rabbits (i.e., sightings) as evidence of occupancy. However, multiple locations within a patch with recent pellets were sufficient for classifying a patch as “occupied.” If a pygmy rabbit was sighted, or active burrows or recent pellets were found, the locations of the sighting, burrow, and/or pellets was recorded.

Potential well pads, road access and existing roads were surveyed more extensively for pygmy rabbits. Active pygmy rabbit burrows were buffered by 100 feet. The locations of potential well pads and access roads were moved to avoid the 100-foot buffer placed on active pygmy rabbit burrows.

Greater Sage-grouse

Four known greater sage-grouse leks and one historic lek are known to occur in or within three miles of the Marys River Exploration Project Area. The four known leks include Antelope Springs, Bishop Flats 1, Bishop Flats 2, and Black Mountain (Barry’s) leks. According to previous surveys, only Bishop Flats 2 and Black Mountain leks are active, with Black Mountain representing a trend lek by the Nevada Division of Wildlife (NDOW).

Exploration activities may occur during the sage-grouse breeding season (March 15 – May 30) in the future. Because of this possibility, HWA surveyed the known sage-grouse leks and searched for new or undocumented leks in and within three miles of the Marys River Exploration Project Area. Aerial surveys were conducted on March 27-28 and April 4-5, 2012 to search for new or undocumented leks. Surveys for new leks consisted of two flights over suitable habitat



(relatively flat areas with openings or low density sagebrush). Surveys were performed from sunrise to 1.5 hours after sunrise in a fixed-wing aircraft flying at an altitude of 100-300 feet above the ground and airspeed of 60-70 miles per hour. Transects were located approximately 0.5 miles apart and flown in a north-south direction starting on the east side of the survey area and working west. GPS coordinates of greater sage-grouse leks were recorded and the number of grouse observed was documented.

Three ground count surveys were conducted at each lek location within three miles of the Marys River Exploration Project Area to determine grouse occupancy and the maximum number of birds attending the lek. Surveys were conducted between March 26 and April 12, 2012. Surveys were performed from sunrise to 1.5 hours after sunrise, separated by 7 days. Leks were observed with binoculars or spotting scopes from a truck for approximately 15 minutes during each survey. Data collected during surveys at each lek location included maximum number of birds, activity, and sex of observed birds. Leks were classified as “active” if two or more strutting males were observed during any of the surveys or if sign (feathers, scat, or prints) was observed on the lek late in the strutting season.

Raptors

Exploration activities may occur during raptor breeding season (March 15 – July 31) in the future and active raptor nests will have buffered timing stipulations based on raptor species. Ground surveys were conducted to determine activity status of known nests and to search for new or previously undocumented nests. Nests were observed from a distance, using binoculars or spotting scopes, to determine whether or not adult birds were present on or near the nest. If adult raptors were present, the biologist remained at a distance to avoid disturbing the birds. If it was determined that no adult birds were present and if it was possible, the areas under, around, and in the nests were searched for signs of recent activity (fresh mite, regurgitated pellets, eggs, eggshell fragments, prey remains, etc.). Accurate GPS locations of raptor nests were recorded at the nest site and the nest status, condition, substrate, and species of raptor using the nest were documented.

During wildlife surveys, all opportunistic raptor sightings were recorded. When ground nesting raptors such as burrowing owls were opportunistically sighted, they were observed from a distance to find potential location of nests and or/active burrows. If the owl flushed from a burrow, the surrounding area was searched for signs of recent activity (fresh mite, regurgitated pellets, prey remains) and an accurate GPS location was recorded at the nest burrow.

RESULTS

During 2012, surveys for wildlife species conducted by HWA in and around Marys River Exploration Project Area included: 1) surveys for general vegetation types within the Project Area, 2) surveys for active pygmy rabbit burrows within the Project Area, 3) surveys of nesting raptors in and within one mile of the Project Area, 4) aerial surveys for new or previously undocumented greater sage-grouse leks in and within three miles of the Project Area, and 5) ground surveys of known sage-grouse leks in and within three miles of the Project Area.

Vegetation

Vegetation types were identified and delineated within the Marys River Exploration Project Area during the 2012 field season. The refined boundaries of vegetation types are illustrated in Figure 1. Twelve vegetation types were observed in the area and are described in Table 1. The most common vegetation types were sagebrush community, sagebrush/grassland, and riparian. Rabbitbrush (*Chrysothamnus viscidiflorus* and *Ericameria nauseosa*), cheatgrass (*Bromus tectorum*), and crested wheatgrass (*Agropyron cristatum*) were also common. Noxious weeds such as scotch thistle (*Onopordum acanthium*), hoary cress (*Cardaria draba*), perennial pepperweed (*Lepidium latifolium*), Russian knapweed (*Centaurea repens*), and leafy spurge (*Euphorbia esula*) were not documented during wildlife or vegetation surveys in the Marys River Exploration Project Area (note: surveys were conducted between March and April, wet areas were avoided by 100-foot buffers, no agricultural areas were surveyed, and timing of surveys may have been outside the growing season for these species). Further surveying for noxious weeds will be conducted on the well pads and access roads that will be chosen for development in Spring 2013.

The Elko whitlowcress was not found in the Project Area. Prior to conducting surveys, surveyors visited a location six miles south of the Project Area where the plant was known to occur (Nycole Burton-Elko BLM, personal communication March 2012) to become familiar with the characteristics necessary for the Elko whitlowcress. According to the Nevada Natural Heritage Program, the Elko whitlowcress occurs between 8,000 and 10,780 feet in elevation. Elevation at the known location was over 2,000 feet higher than the average elevation in the Marys River Exploration Project Area. Photos were taken at the known plant location outside the Project Area to show that the habitat and climatic conditions where the Elko whitlowcress was previously observed, do not occur in the Project Area (Appendix B).

Greater Sage-grouse

Aerial Surveys

Two rounds of aerial flights were conducted to search for new or previously undocumented sage-grouse leks in and within three miles of the Project Area. One new or previously undocumented sage-grouse lek was discovered in Section 9 T39N:R60E. This possible new lek is located approximately two miles outside of the Project Area to the northwest. The lek was discovered on March 28, 2012 during the first round of aerial surveys of the Project Area with six males present and four males present during the second round of aerial surveys on April 4, 2012. This location was shared with NDOW and the BLM – Elko District Field Office.

Ground Surveys

Five viable sage-grouse leks, including the possible new lek, occur in and within three miles of the Project Area (Map 1). Three leks were active (Black Mountain, Bishop Flats 2, and the possible new lek) and two leks were inactive (Antelope Springs and Bishop Flats 1) during 2012 (Tables 2 and 3). Bishop Flats 2 lek had a maximum count of 19 males and six females on March 29, 2012. A ground survey was conducted on April 5 for the possible new lek, following landowner access one week after its discovery during the first aerial flight, and a maximum of 10



males were observed. A second ground survey on April 12 was conducted during cold, windy conditions and no birds were present. Black Mountain lek is a trend lek surveyed by NDOW biologists and was not surveyed from the ground by HWA. Antelope Springs lek had no birds during any of the three surveys. This area was burned in 2007 and may have influenced the avoidance of birds during the lekking season. Bishop Flats 1 lek also had no birds during any of the three ground surveys.

Pygmy Rabbit

Prior to surveys, Noble Energy agreed with recommendations to avoid any active pygmy rabbit burrow by 100 feet for exploration activities such as well pads and access roads. A total of 1,248 active burrows were found within the Project Area (Map 1). Pygmy rabbit sign was observed at 1,609 burrows but only 1,248 were classified as active (i.e., recent pellets or sightings of pygmy rabbits). Out of 55 sections surveyed, 47 sections (85.4%) had active pygmy rabbit burrows present. Number of active burrows ranged from 0 to 198 per section with an average density of 22.7 active pygmy rabbit burrows per square mile within the 55 sections surveyed. A total of 22 individual pygmy rabbit sightings were documented throughout the Project Area. The largest concentrations of active pygmy rabbit burrows were found in Sections 7 and 26 T38N:R61E (Table 4). There were 198 active burrows recorded in Section 26, and 93 active burrows in Section 7. Trail cameras (Reconyx, Inc HC600 Hyperfire™ Covert IR) were positioned on three separate burrows with recent pygmy rabbit activity to capture photographs of movement/individuals at the burrows (Appendix C).

Well pads were shifted to avoid the 100-foot buffers placed on active pygmy rabbit burrows. Federal well #MR3861-7NE was reduced in size (approximately 13-acre rectangle instead of the 20 acre square) to avoid conflicts with active pygmy rabbit burrows. All other well pads remained at the 20-acre size to provide space for positioning the proposed 10-acre well pad.

Regular fluctuations or cycles of pygmy rabbits have not been documented, but anecdotal information suggests that populations can fluctuate dramatically (Weiss and Verts 1984, Crawford 2008). Crawford (2008) found pygmy rabbit survival rates can vary monthly and across fine spatial scales. Subsequently, pygmy rabbits appear highly susceptible to rapid declines and local extirpation (Weiss and Verts 1984, Crawford 2008). Even though predation appears to be the main source of pygmy rabbit mortality (Crawford 2008), the interactions of predation, food availability, and weather likely determine winter survival and could result in rapid declines.

Ultimately, conclusions that can be drawn from the survey results are limited, but they include: (1) pygmy rabbit presence was much higher than anticipated throughout the Project Area, and (2) pygmy rabbit density was variable across the Project Area. Clearly, more long-term research and intensive monitoring are necessary for understanding the intrinsic and extrinsic factors influencing pygmy rabbit populations across the landscape.

Raptors

Within the Marys River Exploration Project Area and its one-mile buffer, 23 nest sites were documented (Map 1) including: three burrowing owl nests, two great horned owl (*Bubo virginianus*) nests, three red-tailed hawk (*Buteo jamaicensis*) nests, seven unknown raptor nests, and eight common raven nests (*Corvus corax*) (Table 5). Twenty-one of the 23 nests were new or previously undocumented nests discovered in 2012. One historic nest (#9) was on private land and could not be surveyed due to landowner restrictions. Observing the nest by spotting scope or binoculars was not possible from public land.

Of the twenty-one viable nests surveyed, two great horned owl nests (#23 and 29), two red-tailed hawk nests (#24 and 31), and four common raven nests (#15, 30, 33, and 35) were active (Table 5).

Active raven nest (#15) was located in a cross beam of the radio tower in Section 31 T39N:R61E. A pair of red-tailed hawks was perched near the top of the radio tower, above the raven nest, on numerous occasions during the survey period. However, an associated nest with the red-tailed hawk pair was not found.

Burrowing Owl

A total of five burrowing owls were sighted during the survey period (Table 6, Map 1). Three of these sightings were observed with individual birds exiting a burrow. These locations were recorded as potential nests (#18, 27, and 28). The two remaining sightings were visuals of individual birds, but there was not enough evidence (i.e. fresh mute, regurgitated pellets, or prey remains) to suggest a potential nest site. Proposed Fee Well #MR3961-26 was approximately 0.5 miles from one of these burrowing owl sightings (Table 7, Map 1).

Two adults were observed exiting a burrow at potential nest #27 which had high quantities of pellets and fresh mute outside the burrow. A trail camera was placed at this location to verify the use of the mating pair. Photos documented the pair using the burrow, and copulation among the pair was recorded (Appendix D). This potential nest site was approximately 0.27 miles from proposed Fee Well #3861-27SW (Table 7). Because the observations were outside the survey period for breeding, these locations may need further surveys next spring to verify actual nest sites and to determine if timing stipulations should be applied.

DISCUSSION

The majority of the Project Area has been invaded by cheatgrass, an invasive annual grass that has led to increased wildfire frequency and subsequent loss of sagebrush communities important to sage-grouse (Baker 2011). Fire frequency is increased with cheatgrass invasion; the establishment of cheatgrass causes substantial competition for resources used by native shrub-steppe species (Whisenant 1990, Knick and Rotenberry 1997). The likelihood of future fires can lead to the loss of perennial grasses and shrubs (Crawford et al. 2004) that are needed for multiple life stages for sage-grouse. Sage-grouse in the Great Basin region, which includes Nevada, are greatly influenced by habitat loss caused by wildfire. Because the Marys River



Project Area has been invaded by cheatgrass, human disturbance could promote the propagation of this invasive species and potentially increase the spread of wildfire in the area. Any disturbance activities in this area will need to implement precautionary measures to reduce the risks associated with wildfire, especially to sage-grouse. Some precautionary measures include suppression tactics, training programs, and proper cleaning of field vehicles to prevent the spread of noxious weeds or invasive species into sage-grouse habitat.

OTHER WILDLIFE

During the course of surveys conducted within the Marys River Exploration Project Area in 2012 other wildlife species and sign were observed and documented, including 37 bird species, 13 mammal species, and one reptile species:

Birds	
American Kestrel (<i>Falco sparverius</i>)	Long-billed Curlew (<i>Numenius americanus</i>)
American Robin (<i>Turdus migratorius</i>)	Mallard (<i>Anas platyrhynchos</i>)
American Wigeon (<i>Anas americana</i>)	Mourning Dove (<i>Zenaida macroura</i>)
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	Northern Flicker (<i>Colaptes auratus</i>)
Black-billed Magpie (<i>Pica hudsonia</i>)	Northern Harrier (<i>Circus cyaneus</i>)
Brewer's Sparrow (<i>Spizella breweri</i>)	Northern Pintail (<i>Anas acuta</i>)
Birds (Continued)	
Bufflehead (<i>Bucephala albeola</i>)	Northern Shoveler (<i>Anas clypeata</i>)
Canada Goose (<i>Branta canadensis</i>)	Prairie Falcon (<i>Falco mexicanus</i>)
Canvasback (<i>Aythya valisineria</i>)	Red-winged Blackbird (<i>Agelaius phoeniceus</i>)
Chukar (<i>Alectoris chukar</i>)	Rough-legged Hawk (<i>Buteo lagopus</i>)
Cinnamon Teal (<i>Anas cyanoptera</i>)	Sage Sparrow (<i>Amphispiza belli</i>)
Common Snipe (<i>Gallinago delicata</i>)	Sage Thrasher (<i>Oreoscoptes montanus</i>)
Dark-eyed Junco (<i>Junco hyemalis</i>)	Sandhill Crane (<i>Grus canadensis</i>)
Golden Eagle (<i>Aquila chrysaetos</i>)	Short-eared Owl (<i>Asio flammeus</i>)
Gray Partridge (<i>Perdix perdix</i>)	Turkey Vulture (<i>Carthartes aura</i>)
Horned Lark (<i>Eremophila alpestris</i>)	Western Meadowlark (<i>Sturnella neglecta</i>)
Killdeer (<i>Charadrius vociferus</i>)	Willet (<i>Catoptrophorus semipalmatus</i>)
Loggerhead Shrike (<i>Lanius ludovicianus</i>)	Wilson's Phalarope (<i>Phalaropus tricolor</i>)
Northern Shrike (<i>Lanius excubitor</i>)	
Mammals	
Badger (<i>Taxidea taxus</i>)	Ord's Kangaroo Rat (<i>Dipodomys ordii</i>)
Beaver (<i>Castor Canadensis</i>)	Pocket Gopher spp. Mounds
Black-tailed Jackrabbit (<i>Lepus californicus</i>)	Porcupine (<i>Erethizon dorsatum</i>)
Coyote (<i>Canis latrans</i>)	Pronghorn (<i>Antilocapra americana</i>)
Desert Cottontail (<i>Sylvilagus auduboni</i>)	Townsend's Ground Squirrel (<i>Urocitellus townsendii</i>)
Least Weasel (<i>Mustela nivalis</i>)	Uinta Chipmunk (<i>Tamias umbrinus</i>)
Mule Deer (<i>Odocoileus hemionus</i>)	

Reptiles	
Desert Horned Lizard (<i>Phrynosoma platyrhinos</i>)	

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**Table 1.** Descriptions and area summaries in acres for vegetation types observed within the Marys River Exploration Project Area during Spring 2012.

Vegetation Type	Description	Field Observations	Area (ac)	% Project Area
Agricultural Land	Agricultural land and waste water irrigation areas. Most areas not currently farmed.	Pivot and other irrigated fields.	42.2	<0.1
Bare	Sparse vegetation cover.	Areas heavily used by cattle.	6.1	<0.1
Disturbed	Roads, pipelines, ranches, and industry infrastructure.	Crested wheatgrass (<i>Agropyron cristatum</i>) Cheatgrass (<i>Bromus tectorum</i>)	22.7	<0.1
Drainage	Primarily dry, ephemeral streams dominated by upland vegetation.	Wyoming big sagebrush (<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>) Crested wheatgrass (<i>Agropyron cristatum</i>) Cheatgrass (<i>Bromus tectorum</i>)	3,452.1	8.8
Grass Dominated	Dominated by non-native grasses, with shrubs comprising a very small percentage of overall cover (<5%).	Crested wheatgrass (<i>Agropyron cristatum</i>) Cheatgrass (<i>Bromus tectorum</i>)	1,919.7	4.9
Greasewood	Dominated by greasewood with shrubs occurring approximately 5-15% cover.	Greasewood (<i>Sarcobatus vermiculatus</i>)	25.7	<0.1
Rabbitbrush/ Grass Mix	Dominated by rabbitbrush and a mixture of grasses with shrubs occurring at approximately 10-20% cover.	Rabbitbrush (<i>Chrysothamnus viscidiflorus</i> and <i>Ericameria nauseosa</i>) Crested wheatgrass (<i>Agropyron cristatum</i>) Cheatgrass (<i>Bromus tectorum</i>)	495.5	1.3
Riparian	Primarily wet, perennial streams dominated by vegetation.	Canada thistle (<i>Cirsium arvense</i>) Crested wheatgrass (<i>Agropyron cristatum</i>) Sedges (<i>Carex</i> sp.) Willow (<i>Salix</i> spp.)	4,392.6	11.2
Sagebrush Community	Dominated by sagebrush with shrubs occurring at approximately 10-30% cover.	Wyoming big sagebrush (<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>) Rabbitbrush (<i>Chrysothamnus viscidiflorus</i> and <i>Ericameria nauseosa</i>) Crested wheatgrass (<i>Agropyron cristatum</i>) Bluebunch wheatgrass (<i>Pseudoroegneria spicata</i>) Spiny phlox (<i>Phlox hoodii</i>)	13,658	34.7

Table 1. Continued.

Vegetation Type	Description	Field Observations	Area (ac)	% Project Area
Sagebrush/ Rabbitbrush	Dominated by sagebrush and mixture of rabbitbrush, with shrubs (predominantly sagebrush) occurring at approximately 10-20% cover.	Wyoming big sagebrush (<i>Artemisia tridentata ssp. wyomingensis</i>) Rabbitbrush (<i>Chrysothamnus viscidiflorus</i> and <i>Ericameria nauseosa</i>)	605.7	1.5
Sagebrush- Grassland	Dominated by grasses, with shrubs (predominantly sagebrush) occurring at approximately 5% cover.	Wyoming big sagebrush (<i>Artemisia tridentata ssp. wyomingensis</i>) Rabbitbrush (<i>Chrysothamnus viscidiflorus</i> and <i>Ericameria nauseosa</i>) Crested wheatgrass (<i>Agropyron cristatum</i>) Western wheatgrass (<i>Pascopyrum smithii</i>) Bluebunch wheatgrass (<i>Pseudoroegneria spicata</i>) Cheatgrass (<i>Bromus tectorum</i>)	14,736.6	37.4
Playa	Natural depression containing water, or evidence of water (ex. salt deposits, wetland vegetation).	Canada thistle (<i>Cirsium arvense</i>) Willow (<i>Salix</i> spp.)	0.43	<0.1

Table 2. Results of greater sage-grouse lek count surveys conducted by HWA for the Marys River Exploration Project Area in Elko County, Nevada during 2012.

Lek Name	Date	Obs. Begin	Obs. End	# Males	# Females	# Unk	Total
Bishop Flats 1	3/26/2012	714	730	0	0	0	0
Bishop Flats 1	3/29/2012	619	640	0	0	0	0
Bishop Flats 1	4/4/2012	627	642	0	0	0	0
Bishop Flats 1	4/12/2012	614	632	0	0	0	0
Bishop Flats 2	3/26/2012	631	704	18	0	0	18
Bishop Flats 2	3/29/2012	648	708	19	6	0	25
Bishop Flats 2	4/4/2012	650	722	8	1	0	9
Bishop Flats 2	4/11/2012	545	610	18	0	0	18
Antelope Springs	3/27/2012	620	710	0	0	0	0
Antelope Springs	4/3/2012	639	708	0	0	0	0
Antelope Springs	4/10/2012	648	713	0	0	0	0
Possible New Lek	3/28/2012*	645	700	6	0	0	6
Possible New Lek	4/4/2012*	720	721	4	0	0	4
Possible New Lek	4/5/2012	631	709	10	0	0	10
Possible New Lek	4/12/2012	608	633	0	0	0	0

* Aerial Survey

Table 3. Summary of greater sage-grouse leks in and around Marys River Exploration Project Area in Elko County, Nevada during 2012.

Lek Name	Status	Source	Male Max	Legal Location			UTM NAD83	
			Count 2012	Twn	Rng	Sec	Easting	Northing
Antelope Springs	Inactive	NDOW	0	39N	61E	20	658900	4568000
Black Mountain (Barry's) ¹	Active	NDOW	Unknown	39N	61E	9	659695	4571894
Bishop Flats 1	Inactive	NDOW	0	38N	62E	6	666923	658900
Bishop Flats 2	Active	NDOW	19	38N	62E	5	667414	4563602
Possible New Lek	Active	HWA	10	39N	60E	9	650495	4570873

¹ Trend lek surveyed by Nevada Division Of Wildlife (NDOW).

Table 4. Pygmy rabbit sign/sightings throughout Noble Energy's Marys River Exploration Project Area during Spring 2012.

Section	Township	Range	# of Active Burrows ¹	Total # of Burrows ²	Sightings
01	T38N	R60E	70	83	2
02	T38N	R60E	17	29	0
11	T38N	R60E	19	34	0
12	T38N	R60E	10	13	0
13	T38N	R60E	52	70	0
14	T38N	R60E	17	22	0
23	T38N	R60E	12	13	1
24	T38N	R60E	0	0	0
25	T38N	R60E	11	12	0
26	T38N	R60E	10	10	0
02	T38N	R61E	0	0	1
03	T38N	R61E	13	20	0
04	T38N	R61E	18	26	0
05	T38N	R61E	--	--	--
06	T38N	R61E	11	22	0
07	T38N	R61E	93	116	0
08	T38N	R61E	7	7	1
09	T38N	R61E	28	36	1
10	T38N	R61E	0	0	0
11	T38N	R61E	12	12	0
14	T38N	R61E	25	34	0
15	T38N	R61E	6	6	0
16	T38N	R61E	3	3	0
17	T38N	R61E	22	26	0
18	T38N	R61E	45	53	1
19	T38N	R61E	10	11	0
20	T38N	R61E	12	16	1
21	T38N	R61E	20	22	0
22	T38N	R61E	20	20	1
23	T38N	R61E	51	115	0
26	T38N	R61E	198	282	2
27	T38N	R61E	9	27	1
28	T38N	R61E	0	0	0
29	T38N	R61E	29	32	1
30	T38N	R61E	81	86	0
31	T38N	R61E	--	--	--
32	T38N	R61E	7	7	0
33 ³	T38N	R61E	10	10	0
34	T38N	R61E	20	20	0
35 ³	T38N	R61E	4	4	1

Table 4. Continued.

Section	Township	Range	# of Active Burrows ¹	Total # of Burrows ²	Sightings
23	T39N	R60E	15	16	1
24	T39N	R60E	54	57	1
25	T39N	R60E	15	15	3
26	T39N	R60E	0	1	0
35	T39N	R60E	20	24	1
36	T39N	R60E	3	5	0
19	T39N	R61E	15	19	0
20	T39N	R61E	0	0	0
21	T39N	R61E	0	0	0
22	T39N	R61E	39	46	1
23	T39N	R61E	4	4	0
26	T39N	R61E	47	49	0
27	T39N	R61E	19	25	0
28	T39N	R61E	--	--	--
29	T39N	R61E	--	--	--
30	T39N	R61E	--	--	--
31	T39N	R61E	5	5	0
32	T39N	R61E	31	32	1
33	T39N	R61E	--	--	--
34	T39N	R61E	9	11	0
35 ⁴	T39N	R61E	0	1	0

¹ # of Active Burrows: Burrows with recent sign such as fresh pellets, tracks, and sightings.

² Total # of Burrows: Burrows with old (currently inactive) pellets and recent sign outside burrows.

³ Only southern half of section surveyed due to landowner access.

⁴ Only southern half surveyed to avoid the historic area around Metropolis in the northern half of section.

-- Private land with no access.

Table 5. Locations and status of nest sites in and around the Marys River Exploration Project Area during 2012.

Nest ID	Species	Status ¹	Nest		UTM NAD83		Legal Location			
			Substrate ²	Condition	Northing	Easting	QQ	Sec	TwN	Rng
1	Unknown Raptor	Historic	BUR	Gone	4557087	648986	SWNE	29	38N	60E
9*	Unknown Raptor	Unknown	UNK	Unknown	4568517	669785	NESW	21	39N	62E
15	Common Raven	Active	PWR	Excellent	4564819	656228	SWSW	31	39N	61E
16	Common Raven	Tended	PWR	Good	4553345	654749	SWSW	1	37N	60E
17	Common Raven	Tended	BLD	Excellent	4565890	662535	NWNW	35	39N	61E
18	Burrowing Owl	Visited	BUR	Good	4559693	661969	SWSE	15	38N	61E
19	Common Raven	Tended	BLD	Excellent	4565896	662533	NWNW	35	39N	61E
21	Common Raven	Visited	PWR	Fair	4551419	653197	SWSW	14	37N	60E
22	Unknown Raptor	Inactive	ANS	Poor	4565916	662756	NWNW	35	39N	61E
23	Great Horned Owl	Active	CTL	Excellent	4567841	665576	SESE	24	39N	61E
24	Red-tailed Hawk	Active	CTL	Excellent	4568668	662459	SENE	23	39N	61E
25	Unknown Raptor	Inactive	ANS	Fair	4569331	662013	NWNE	22	39N	61E
26	Red-tailed Hawk	Inactive	CTL	Fair	4569360	662400	NENE	22	39N	61E
27	Burrowing Owl	Tended	BUR	Good	4556407	661711	SESW	34	38N	61E
28	Burrowing Owl	Tended	BUR	Good	4558309	664072	SESE	23	38N	61E
29	Great Horned Owl	Active	CTL	Excellent	4566346	668655	SESE	29	39N	62E
30	Common Raven	Active	PWR	Excellent	4569410	653491	SESW	14	39N	60E
31	Red-tailed Hawk	Active	PWR	Excellent	4569510	653820	SWSE	14	39N	60E
32	Unknown Raptor	Inactive	JUN	Fair	4568031	654439	SWSW	23	39N	60E
33	Common Raven	Active	CLF	Excellent	4555791	662132	SWNE	34	38N	61E
34	Unknown Raptor	Inactive	PWR	Good	4569728	654426	NESE	14	39N	60E
35	Common Raven	Active	PWR	Excellent	4569182	652786	NENE	22	39N	60E
36	Unknown Raptor	Inactive	ANS	Fair	4556674	649019	NWSE	29	38N	60E

¹ Active - Eggs, chicks, or adult in incubating position in nest
 Inactive - No eggs or chicks
 Tended - Fresh material added to nest
 Visited - Adult perched at or near nest

² ANS - Artificial Structure CTL - Cottonwood Live
 BLD - Building JUN - Juniper
 BUR - Burrow PWR - Power Line
 CLF - Cliff UNK - Unknown

* No landowner permission to survey nest.

Table 6. Burrowing owl sightings and potential nests encountered during surveys in the Marys River Exploration Project Area during March and April, 2012.

Nest ID	Date	UTM NAD 83		Legal Location			Activity	Sign ¹
		Easting	Northing	SEC	TWN-N	RNG-E		
18	3/29/2012	661969	4559690	15	38	61	Flushed 1 adult from burrow.	Moderate
27	3/30/2012	661711	4556410	34	38	61	Flushed 2 adults from burrow.	High
28	3/31/2012	664072	4558310	23	38	61	Flushed 1 adult from burrow.	Moderate
-- ²	4/6/2012	662597	4566870	26	39	61	Flushed 1 adult but no burrow found.	None
-- ²	4/10/2012	656164	4559380	19	38	61	Flushed 1 adult from burrow.	Low

¹ High - Pellets, fresh mute, prey items present.

Moderate - Few pellets, minimal mute.

Low - No pellets present, minimal amount of mute.

--² Not enough sign/evidence to classify as possible nest.

Table 7. Wildlife conflicts associated with potential well pads in the Marys River Exploration Project Area in Elko County, Nevada during Spring 2012.

Lease	Well Name	Wildlife Conflicts?		
		Pygmy Rabbit	Nesting Raptor	Greater Sage-Grouse
Federal	MR3860-12SE	No	No	No
Federal	MR3860-13SE	No	No	No
Federal	MR3860-1NE	No	No	No
Federal	MR3860-1SE	No	No	No
Federal	MR3860-25	No	No	No
Federal	MR3861-18	No	No	No
Federal	MR3861-30	No	No	No
Federal	MR3861-4	No	No	No
Federal	MR3861-4NE	No	No	No
Federal	MR3861-6SE	No	No	No
Federal	MR3861-7NW	No	No	No
Federal	MR3861-7SE	No	No	No
Federal	MR3861-8	No	No	No
Federal	MR3861-9	No	No	No
Federal	MR3861-9NE	No	No	No
Federal	MR3960-25SE	No	No	No
Federal	MR3961-31NE	No	No	No
Federal	MR3961-31SE	No	No	No
Federal	MR3961-32SE	No	No	No
Federal	MR3961-34W	No	No	No
Fee	MR3861-9SW	No	No	No
Fee	MR3861-14	No	No	No
Fee	MR3861-17	No	No	No
Fee	MR3861-17NE	No	No	No
Fee	MR3861-20	No	No	No
Fee	MR3861-20SE	No	No	No
Fee	MR3861-21NE	No	No	No
Fee	MR3861-21W	No	No	No
Fee	MR3861-27	No	No	No
Fee	MR3861-27NE	No	No	No
Fee	MR3861-27SW	No	Potential	No
Fee	MR3861-29	No	No	No
Fee	MR3861-3	No	No	No
Fee	MR3961-26	No	Potential	No

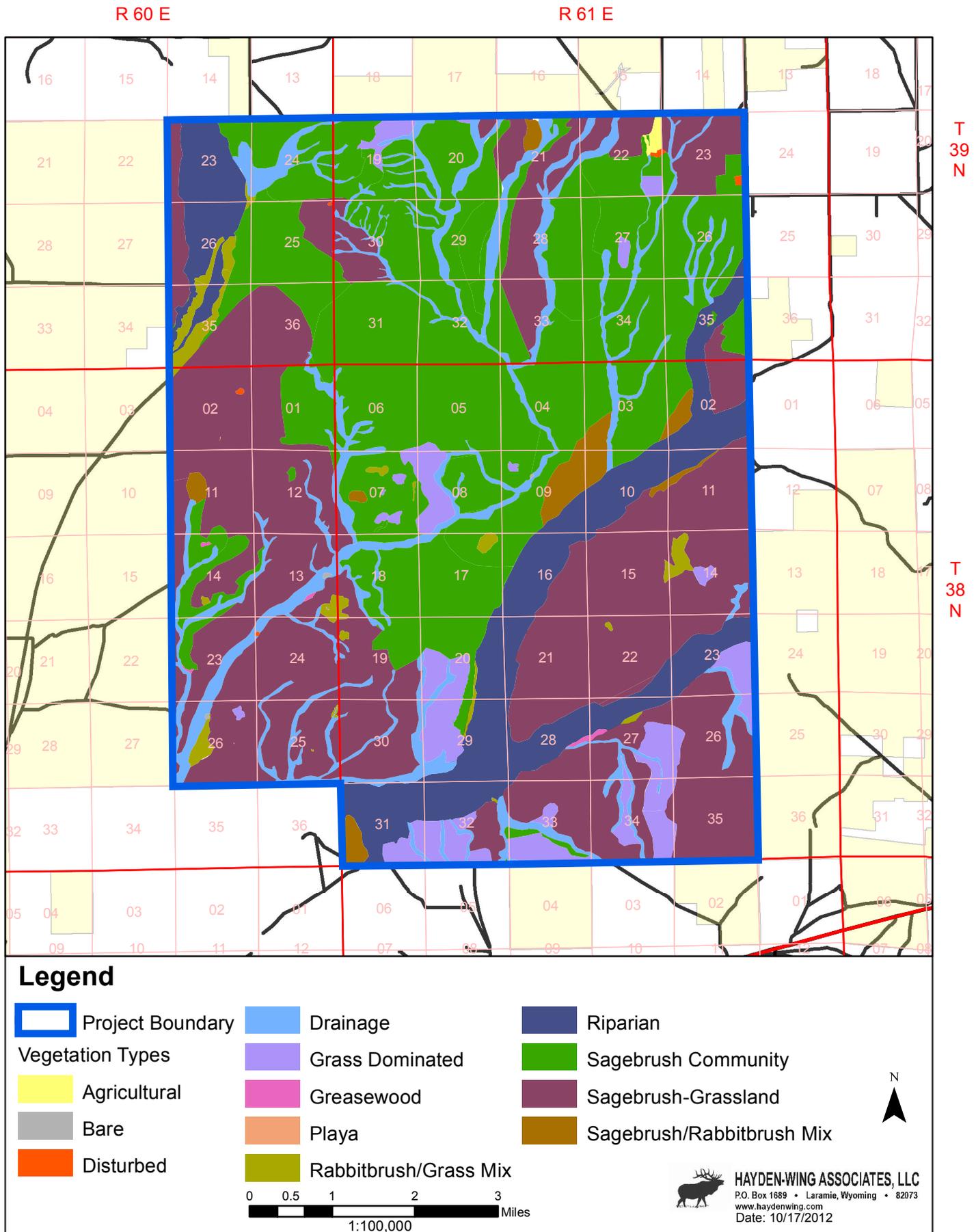


Figure 1. General vegetation types for the Marys River Exploration Project Area during Spring 2012.

APPENDIX A

Pygmy Rabbit Survey Protocol

Marys River Seismic Project
Pre-Construction Pygmy Rabbit Surveys

Purpose: Determine presence/absence of pygmy rabbits within potential habitat.

Survey requirements (as directed by BLM—EFO and WFO):

Time: Diurnal—anytime except during or immediately following accumulating snowfall.

Survey Area: All potential habitats on BLM land within the project area.

Timing: At least one pre-construction survey during winter/spring.

Methods:

Training:

- 1) Review the supporting information for pygmy rabbits (see Ulmschneider et al. 2004).
- 2) Prior to fieldwork, examine pellet specimens, HWA training DVD and photos collected by previous HWA field projects. Before surveying, look at pygmy rabbit habitat, burrows and pellets with an experienced person in the field. If possible, also look at badger and ground squirrel diggings, to help you learn to distinguish the differences between their burrows and those of pygmy rabbits.

Potential habitat:

Pygmy rabbit burrows are usually found in relatively taller (>1 ½ ft) and denser (>30% canopy cover) big sagebrush (*Artemisia tridentata*) and deep soils. Sometimes they are found in shorter sagebrush habitats or short to medium height sagebrush stands also known as “mima mounds”. Subspecies of sagebrush that are used include Wyoming (*A. t. wyomingensis*), mountain (*A. t. vaseyana*), and Great Basin (*A. t. tridentata*). Other shrub species may be present, including bitterbrush (*Purshia tridentata*), rabbitbrush (*Chrysothamnus* spp.), greasewood (*Sarcobatus vermiculatus*), snowberry (*Symphoricarpos* spp.), and juniper (*Juniperus* spp.). In Nevada, pygmy rabbits may use dense rabbitbrush when it is the dominant shrub or is co-dominant with sagebrush (Ulmschneider et al. 2004).

Because the pygmy rabbit typically excavates its own burrow, soils are typically loamy and deeper than 20 inches (Ulmschneider et al. 2004). Burrows in Nevada are typically found in soils that are light-colored and friable. Burrows usually have more than one opening and are associated with a system (Ulmschneider et al. 2004). Following a study in Nevada and California, the presence of pygmy rabbits were found to be higher with increasing sagebrush cover, decreasing understory stem density, absence of cheatgrass, absence of reddish soils and absence of rodent burrows (Larrucea and Brussard 2008).

According to Ulmsheider et al (2004):

“In Nevada pygmy rabbits are found in broad valley floors, drainage bottoms, alluvial fans, and other areas with friable soils. Burrows can be located in mounds (either natural or human caused) when they are available in these types of soils. Pygmy rabbit burrows are easiest to find in light colored, friable soils. These soils are usually found in valley bottoms and can be associated with rabbitbrush / sagebrush vegetation. The understory of grasses and forbs can vary from almost none (as in the Reese River Valley) to dense (as in the Sheldon Range). When there are a lot of rabbits present in a valley they are generally distributed throughout the area. However, when there are only a few individuals, they are generally located in the largest, most dense clumps of vegetation (as in the White River Valley).”

During winter, pygmy rabbit tracks and pellets in the snow can be more obvious than other times of the year. Also during this time of the year, juvenile cottontails are nearly the same size as adults, which should minimize overlap in track size between the species. After a fresh light snow, fresh tracks and fresh pellets are obvious. Fresh tracks can be followed to burrow entrances. Rabbits will clean out burrow entrances following snowfall, making identification of occupied burrows easier.

Survey Protocol:

1. Search for potential habitat by using transects oriented north to south and spaced 300 meters apart (approximate distance between seismic source lines). Only BLM land within the project boundary will be surveyed. Search for potential habitat using ATVs, then search for evidence indicating the presence of pygmy rabbits within potential habitat on foot. The goal is for complete visual coverage of the survey area so additional searching may be necessary in areas where topography prevents full visual coverage. But, non-habitat (i.e., riparian habitat or burned areas) can be excluded. Evidence of pygmy rabbits include: burrows, pellets, and tracks. Extensively search patches beginning with the highest quality habitat nearest the transect line first. The objective is to find signs of current pygmy rabbit occupancy, which includes active burrows (indicated by open burrows with recent pellets present in or near the opening) or rabbits (i.e., sightings). However, multiple locations within the patch with recent pellets is sufficient for classifying a patch as “occupied” as well. If a pygmy rabbit is sighted, or active burrows or recent pellets are found, record the location of the sighting/burrow/pellets. Record the locations of inactive burrows and old sign as well as these areas have a high likelihood of future re-colonization. Also search all open burrows for pygmy rabbit sign since pygmy rabbits will modify burrows of other species and/or the burrow entrances may be enlarged by badgers.

A used burrow with fresh pellets (B+FP) has the following characteristics: brown, green, or black pellets near a burrow, at least one entrance open, without cobwebs or debris that shows lack of use, usually shows a trail. In snow, tracks and/or pellets visible.

2. Map the perimeter of occupied patches when appropriate, if the habitat patch is well-defined, or if the occupied habitat intersects an area proposed for ground disturbance (standards will be developed in the field).
3. If only inactive burrows or old pellets are found, or if no pygmy rabbit sign is found, continue to search the patch with extreme care until you are absolutely confident the patch is unoccupied. Record whatever evidence you do find, but mapping the patch is not necessary.
4. Every occupied patch of habitat must have at least one point recorded documenting a sighting, active burrow, or recent pellets. *Tracks alone are not sufficient to record a patch as occupied!*
5. Locations of active burrows, sightings, and recent sign should be photographed.

Example: If you search a patch and find old pellets, recent pellets, tracks, inactive burrows, and an active burrow, you should record the GPS location at the location of the **active burrow**. However, if necessary or desired, the locations of different types of pygmy rabbit sign, multiple sightings within a patch, or combinations of sightings and sign can all be recorded separately. Therefore, do not hesitate taking several GPS locations within a single patch.

Definitions:

- *Active Burrow* -- Open burrow with sign of recent use, including recent pellets in the entrance and either fresh tracks or diggings.
- *Recent Pellets* -- Brown, green, or black in color sometimes with a sheen coating.
- *Old Pellets* -- Normally gray and weathered.

References

Larrucea, E. S., and P. F. Brussard. 2008. Habitat selection and current distribution of the pygmy rabbit in Nevada and California, USA. *Journal of Mammalogy* 89:691–699.

Ulmschneider, H., D. Hays, D. Roberts, J. Rachlow, T. Forbes, J. Himes, E. Sequin, M. Haworth, T. Katzner, A. Kozlowski, R. Rauscher, and P. Lauridson. 2004. Surveying for pygmy rabbits (*Brachylagus idahoensis*). Available at <http://sagemap.wr.usgs.gov/docs/DraftPygmy%20RabbitProtocol6_10_04.doc>

APPENDIX B

Elko Whitlowcress Observation Point Photos

**APPENDIX B. Location of Elko Whitlowcress observation point provided by BLM, March 2012.
UTM NAD83 Zone 11 N658263 : E4545297.**





APPENDIX C

Pygmy Rabbit Photos

APPENDIX C. Trail camera photos on pygmy rabbit burrows in the Marys River Project Area.



Section 4 T38N:R61E near the Radio Tower.



Section 4 T38N:R61E near the Radio Tower.



Section 26 T38N:R61E near the Tetuan Well.



Section 26 T38N:R61E near the Tetuan Well.



Section 27 T39N:R61E.



Section 27 T39N:R61E.



Section 28 T39N:61E.



Section 28 T39N:61E.



Section 25 T39N:R60E.



Section 25 T39N:R60E.



Section 25 T39N:R60E.



Section 25 T39N:R60E.

APPENDIX D

Potential Burrowing Owl Nest Photos

APPENDIX D. Trail camera on potential burrowing owl nest in Section 27 T38N:R61E.



2012-04-04 2:42:11 AM M 1/5

44°F



HC600 COVERT

RECONYA

2012-04-04 2:42:12 AM M 2/5

44°F



HC600 COVERT

RECONYA

2012-04-04 2:42:13 AM M 3/5

44°F



HC600 COVERT

2012-04-04 2:42:13 AM M 4/5

44°F

RECONYA



HC600 COVERT

RECONYA

2012-04-04 2:42:14 AM M 5/5

44°F



HC600 COVERT
2012-04-04 11:43:28 PM M 2/5

RECONYA
25°F



HC600 COVERT

RECONYA