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BROOK MINING CO., LLC.
BROOK MINE
VOLUME 8 OF 12
TFN 6 2/025

Brook Mine
Permit Application
Volume VIII

Appendix D9

DEQ Exhibit 9

RAMACO

BROOK MINING CO., LLC.
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VOLUME VIII
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LIST OF EXHIBITS

Exhibit D9.1-1 Wildlife Inventory
Exhibit D9.1-2 Sage-grouse Core Area (2 sheets)

LIST OF ADDENDA

Addendum D9-1 Baseline Wildlife Inventory

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APPENDIX D9 TEXT

WILDLIFE

Appendix D9

Prepared by:
WWC Engineering

October 2014

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D9 WILDLIFE

Baseline wildlife studies for RAMACO's Brook Mine were conducted by Intermountain Resources of Laramie, Wyoming. The baseline report is presented in Addendum D9-1(Baseline Wildlife Inventory).

D9.1 Wildlife

D9.1.1 Methods

Wildlife baseline inventories followed standard survey requirements and protocols used and approved by the U.S. Fish and Wildlife Service (USFWS), Wyoming Game and Fish Department (WGFD) and Wyoming Department of Environmental Quality (WDEQ). Sampling protocols for threatened and endangered (T&E) species followed current federal (USFWS and USFS) guidelines. All other methods were consistent with the Handbook of Biological Techniques (WGFD, 2007) and Guideline No. 5 (WDEQ/LQD, 1994). Guidance was regularly sought from managers and biological specialists from federal and state agencies throughout the baseline survey period. Methods were coordinated with USFWS, WGFD and WDEQ.

Baseline wildlife inventories were conducted 2013 through 2014 at the Brook Mine. Biologists also conducted a wildlife habitat assessment to record any unique or critical habitats that could support T&E species, or other species of special concern. Most of the surveys were completed using binoculars or spotting scopes while travelling throughout the survey area. Standard field guides and references were used to identify wildlife and their sign. Potential species lists were developed based on observances, references, and guides. Habitat requirements and availability for species, as well as critical (USFWS-designated) and crucial (WGFD-designated) habitats and geographical distribution maps, were considered for each species when developing the potential species occurrence lists. Detailed discussions of survey methods for

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each species or general wildlife type (i.e. big game) are included in Addendum D9-1 for the Brook Mine.

D9.1.2 Results

Detailed results of the baseline wildlife monitoring are discussed, tabulated, and shown on figures in Addendum D9-1 for the Brook Mine. A summary of wildlife species that could potentially inhabit or migrate through the Brook Mine Permit Area is included in Table D9.1-1. A wildlife inventory summary is provided in Exhibit D9.1-1.

D9.2 Sage-grouse

The greater sage-grouse is a species whose existence is of great concern throughout the west, and is considered a "landscape species" due to its use of wide expanses of sagebrush as primary habitat during each phase of its life cycle. USFWS currently classifies the greater sage-grouse as a candidate threatened or endangered species under the Endangered Species Act (ESA). Candidate species are plants and animals for which the USFWS has sufficient information on their biological status and threats to propose them as endangered or threatened, but development of a proposed listing regulation is precluded by other higher priority listing activities. Candidate species receive no statutory protection under the ESA (USFWS, 2014). In June 2011, Wyoming Governor Matt Mead issued a revised executive order (2011-5) updating Wyoming's sage-grouse core population area strategy, to help avoid listing of the bird under the Endangered Species Act (State of Wyoming Executive Department Executive Order, 2011). The core areas represent habitats where special restrictions apply to several activities, including energy development, agriculture, and recreation. The new executive order included modified boundaries describing the core areas, including corridors for potential electrical transmission lines.

The Brook Mine permit boundary does not reside within these aforementioned core areas. However, several sage-grouse leks were identified in

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adjacent study areas. None of these leks are located within the Brook Mine permit area or within one mile. Addendum D9-1 has the detailed discussion of sage-grouse surveys. A request has been made of the Wyoming Game & Fish for a determination of the relation of the Brook Mine to known Sage Grouse core areas and is provided in Exhibit D9.1-2. The letter received from the Wyoming Game and Fish Department is provided on page D9-E3 of the Appendix D9 Exhibit Section.

D9.3 References

Big Horn Mine. (n.d.). *Big Horn Mine Permit to Mine Application No. 213.* Cheyenne, Wyoming: Appendix D-9: Files of the WDEQ/LQD.

State of Wyoming Executive Department Executive Order. (2011). *Order 2011-5: Greater Sage-Grouse Core Area Protection.* Cheyenne, Wyoming: State of Wyoming.

U.S. Fish and Wildlife Service (USFWS). (2014, March 24). *Greater Sage-Grouse.* Retrieved April 2014, from U.S. Fish and Wildlife Service Endangered Species: Mountain Prairie Region: http://www.fws.gov/mountain-prairie/species/birds/sagegrouse/index.php

Welsh No.1 Mine. (n.d.). *Welsh No.1 Mine Permit to Mine Application No.497.* Cheyenne, Wyoming: Appendix D-9: Files of the WDEQ/LQD .

Wyoming Department of Environmental Quality/Land Quality Division (WDEQ/LQD). (August 1994, August). *Guideline Number 5: Wildlife.* Cheyenne, Wyoming: Wyoming Department of Environmental Quality/Land Quality Division.

Wyoming Game and Fish Department (WGFD). (2007). *Handbook of Biological Techniques; Third Edition.* Cheyenne, Wyoming: Wyoming Game and Fish Department.

Youngs Creek Mine. (n.d.). *Youngs Creek Mine Permit to Mine Application No. 407.* Cheyenne, Wyoming: Appendix D-9: Files of the WDEQ/LQD.

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APPENDIX D9 TABLES

Table D9.1-1. Wildlife Species List for the Brook Coal Mine Study Area

OBSERVED AND POTENTIAL MAMMALIAN INHABITANTS		
Scientific Nomenclature[1]	**Common Name**	**Observed**
INSECTIVORA		
Soricidae		
Sorex cinereus	Masked shrew	*
Sorex merriami	Merriam's shrew	
Sorex monticolus	Dusky shrew	
Sorex palustris	Water shrew	*
Sorex vagrans	Vagrant shrew	
CHIROPTERA		
Vespertilionidae		
Myotis ciliolabrum	Western small-footed myotis	
Myotis evotis	Long-eared myotis	
Myotis lucifugus	Little brown myotis	*
Myotis thysanodes	Fringed myotis	
Myotis volans	Long-legged myotis	
Lasiurus cinereus	Hoary bat	
Lasionycteris noctivagans	Silver-haired bat	
Eptesicus fuscus	Big brown bat	
Plecotus townsendii	Townsend's big-eared bat	
Antrozous pallidus	Pallid bat	
LAGOMORPHA		
Leporidae		
Sylvilagus audubonii	Desert cottontail	*
Sylvilagus nuttallii	Mountain (Nuttall's) cottontail	*
Lepus townsendii	White-tailed jack rabbit	*
RODENTIA		
Sciuridae		
Neotamias minimum	Least chipmunk	*
Marmota flaviventris	Yellow-bellied marmot	*
Spermophilus tridecemlineatus	Thirteen-lined ground squirrel	*
Cynomys ludoviciana	Black-tailed prairie dog	*
Sciurus niger	Eastern fox squirrel	
Tamiasciurus hudsonicus	Red squirrel	*
Geomyidae		
Thomomys talpoides	Northern pocket gopher	*
Heteromyidae		
Perognathus fasciatus	Olive-backed pocket mouse	
Dipodomys ordii	Ord's kangaroo rat	*
Castoridae		
Castor canadensis	Beaver	*
Cricetidae		
Reithrodontomys megalotis	Western harvest mouse	*

[1] Nomenclature from WGFD 2012.

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Table D9.1-1. Wildlife Species List for the Brook Coal Mine Study Area (cont.)

OBSERVED AND POTENTIAL MAMMALIAN INHABITANTS (cont.)		
Scientific Nomenclature[1]	**Common Name**	**Observed**
RODENTIA (cont.)		
Peromyscus leucopus	White-footed mouse	
Peromyscus maniculatus	Deer mouse	*
Onychomys leucogaster	Northern grasshopper mouse	*
Neotoma cinerea	Bushy-tailed woodrat	*
Clethrionomys gapperi	Southern red-backed vole	
Microtus longicaudus	Long-tailed vole	*
Microtus montanus	Montane vole	
Microtus ochrogaster	Prairie vole	
Microtus pennsylvanicus	Meadow vole	*
Lemmiscus curtatus	Sagebrush vole	*
Ondatra zibethicus	Muskrat	*
Muridae		
Rattus norvegicus	Norway rat	
Mus musculus	House mouse	*
Dipodidae		
Zapus hudsonius	Meadow jumping mouse	*
Zapus princeps	Western jumping mouse	*
Erethizontidae		
Erethizon dorsatum	Porcupine	*
CARNIVORA		
Canidae		
Canis latrans	Coyote	*
Canis lupus	Gray wolf	
Vulpes vulpes	Red fox	*
Ursidae		
Ursus americanaus	Black bear	*
Procyonidae		
Procyon lotor	Raccoon	*
Mustelidae		
Mustela erminea	Short-tailed weasel	
Mustela frenata	Long-tailed weasel	*
Mustela nigripes	Black-footed ferret	
Mustela nivalis	Least weasel	
Mustela vision	Mink	*
Taxidea taxus	Badger	*
Mephitis mephitis	Stripped skunk	*
Lutra canadensis	River otter	
Felidae		
Puma concolor	Mountain lion	*

[1] Nomenclature from WGFD 2012.

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Table D9.1-1. Wildlife Species List for the Brook Coal Mine Study Area (cont.)

OBSERVED AND POTENTIAL MAMMALIAN INHABITANTS (cont.)		
Scientific Nomenclature[1]	**Common Name**	**Observed**
CARNIVORA (cont.)		
Lynx rufus	Bobcat	*
ARTIODACTYLA		
Cervidae		
Cervus elaphus	Elk	*
Odocoileus hemionus	Mule deer	*
Odocoileus virginianus	White-tailed deer	*
Alces alces	Moose	*
Antilocapridae		
Antilocapra americana	Pronghorn	*
OBSERVED AND POTENTIAL BIRD INHABITANTS		
ANATIDAE		
Chen caerulescens	Snow Goose	
Branta canadensis	Canada goose	*
Aix sponsa	Wood duck	*
Anas strepera	Gadwall	*
Anas americana	American widgeon	*
Anas platyrhynchos	Mallard	*
Anas discors	Blue-winged teal	*
Anas cyanoptera	Cinnamon teal	*
Anas clypeata	Northern shoveler	*
Anas acuta	Northern pintail	*
Anas crecca	Green-winged teal	*
Aythya valisineria	Canvasback	*
Aythya americana	Redhead	*
Aythya collaris	Ring-necked duck	
Aytha marila	Greater scaup	
Aythya affinis	Lesser scaup	*
Bucephala albeola	Bufflehead	*
Bucephala clangula	Common goldeneye	*
Bucephala islandica	Barrow's goldeneye	
Lophodytes cucullatus	Hooded merganzer	*
Mergus merganser	Common merganser	*
Mergus serrator	Red-breasted merganzer	*
Oxyura jamaicensis	Ruddy duck	*
PHASIANIDAE		
Alectoris chukar	Chukar	*
Perdix perdix	Gray partridge	*

[1] Nomenclature from WGFD 2012.

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Table D9.1-1. Wildlife Species List for the Brook Coal Mine Study Area (cont.)

OBSERVED AND POTENTIAL BIRD INHABITANTS (cont.)		
Scientific Nomenclature[1]	**Common Name**	**Observed**
PHASIANIDAE (cont.)		
Phasianus colchicus	Ring-necked pheasant	*
Centrocercus urophasianus	Greater sage grouse	*
Tympanuchus phasianellus	Sharp-tailed grouse	*
Meleagris gallopava	Wild turkey	*
PODICIPEDIDAE		
Podilymbus podicepts	Pied-billed grebe	*
Podiceps auritus	Horned grebe	*
Podiceps nigricollis	Eared grebe	*
Aechmophorus occidentalis	Western grebe	*
PELECONIDAE		
Pelecanus erythrorynchos	American white pelican	*
PHALACROCORACIDAE		
Phalacrocorax auritus	Double-crested cormorant	*
ARDEIDAE		
Botaurus lentiginosus	American bittern	
Ardea herodius	Great blue heron	*
Egretta thula	Snowy egret	
Nycticorax nycticorax	Black-crowned night-heron	
THRESKIORNITHIDAE		
Plegadis chihi	White-faced ibis	
CATHARTIDAE		
Cathartes aura	Turkey vulture	*
PANDIONIDAE		
Pandion haliaetus	Osprey	*
ACCIPITRIDAE		
Haliaeetus leucocephalus	Bald eagle	*
Circus cyaneus	Northern harrier	*
Accipiter striatus	Sharp-shinned hawk	*
Accipiter cooperii	Cooper's hawk	*
Accipiter gentilis	Northern goshawk	*
Buteo swainsoni	Swainson's hawk	*
Buteo jamaicensis	Red-tailed hawk	*
Buteo regalis	Ferruginous hawk	*
Buteo lagopus	Rough-legged hawk	*

[1] Nomenclature from WGFD 2012.

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Table D9.1-1. Wildlife Species List for the Brook Coal Mine Study Area (cont.)

OBSERVED AND POTENTIAL BIRD INHABITANTS (cont.)		
Scientific Nomenclature[1]	**Common Name**	**Observed**
ACCIPITRIDAE (cont.)		
Aquila chyrsaetos	Golden eagle	*
FALCONIDAE		
Falco sparverius	American kestrel	*
Falco columbarius	Merlin	
Falco rusticolus	Gyrfalcon	*
Falco peregrinus	Peregrine falcon	
Falco mexicanus	Prairie falcon	*
RALLIDAE		
Rallus limicola	Virginia rail	*
Porzana carolina	Sora	*
Fulica americana	American coot	*
GRUIDAE		
Grus canadensis	Sandhill crane	*
CHARADRIIDAE		
Pluvialis squatarola	Black-billed plover	
Pluvialis dominica	American golden-plover	
Charadrius semipalmatus	Semipalmated plover	
Charadrius vociferous	Killdeer	*
Charadrius montana	Mountain plover	
RECURVIROSTRIDAE		
Himantopus mexicanus	Black-necked stilt	
Recurvirostra americana	American Avocet	*
SCOLOPACIDAE		
Tringa melanoleucus	Greater yellowlegs	
Tringa flavipes	Lesser yellowlegs	*
Tringa solitaria	Solitary sandpiper	*
Tringa semipalmatas	Willet	
Actitis maculata	Spotted sandpiper	*
Bartramia longicauda	Upland sandpiper	*
Numenius americanus	Long-billed curlew	*
Limosa fedoa	Marbled godwit	
Calidris alba	Sanderling	
Calidris pusilla	Semipalmated sandpiper	
Calidris mauri	Western sandpiper	

[1] Nomenclature from WGFD 2012.

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Table D9.1-1. Wildlife Species List for the Brook Coal Mine Study Area (cont.)

OBSERVED AND POTENTIAL BIRD INHABITANTS (cont.)		
Scientific Nomenclature[1]	**Common Name**	**Observed**
SCOLOPACIDAE (cont.)		
Calidris minutilla	Least sandpiper	*
Calidris bairdii	Baird's sandpiper	
Calidris melanotos	Pectoral sandpiper	
Calidris himanotopus	Stilt sandpiper	
Limnodromus scolopaceus	Long-billed dowitcher	*
Gallinago delicata	Wilson's snipe	*
Leucophaeus pipixcan	Franklin's gull	
PHALAROPODIDAE		
Phalaropus tricolor	Wilson's phalarope	*
Phalaropus lobatus	Red-necked phalarope	
LARIDAE		
Chroicocephalus philadelphia	Bonaparte's gull	
Larus delawarensis	Ring-billed gull	
Larus californicus	California gull	*
Larus argentatus	Herring gull	
Hydroprogne caspia	Caspian tern	
Sterna hirundo	Common tern	*
Sterna forsteri	Forester's tern	
Childonias niger	Black tern	*
COLUMBIDAE		
Columba livia	Rock pigeon	*
Patagioenas fasciata	Band-tailed pigeon	
Steptopela decaocto	Eurasian collared dove	*
Zenaida macroura	Mourning dove	*
CUCULIDAE		
Coccyzus erythropthalmus	Black billed cuckoo	*
Coccyzus americanus	Yellow-billed cuckoo	
TYTONIDAE		
Tyto alba	Barn owl	
STRIGIDAE		
Megascops kennicottii	Western screech-owl	
Megascops asio	Eastern screech-owl	*
Bubo virginianus	Great horned owl	*
Bubo scandiacus	Snowy owl	

[1] Nomenclature from WGFD 2012.

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Table D9.1-1. Wildlife Species List for the Brook Coal Mine Study Area (cont.)

OBSERVED AND POTENTIAL BIRD INHABITANTS (cont.)		
Scientific Nomenclature[1]	**Common Name**	**Observed**
Athene cunicularia	Burrowing owl	*
Asio otus	Long-eared owl	
Asio flammeus	Short-eared owl	*
Aegolius acadicus	Northern saw-whet owl	*
CAPRIMULGIDAE		
Chordeiles minor	Common nighthawk	*
Phalaenoptilus nuttalli	Common poor-will	
APODIDAE		
Chaetura pelagica	Chimney swift	
Aeronautes saxatalis	White-throated swift	
TROCHILIDAE		
Archilochus alexandri	Black-chinned hummingbird	
Stellula calliope	Calliope Hummingbird	*
Selasphorus platycercus	Broad-tailed hummingbird	
Selasphorus rufus	Rufous hummingbird	
ALCEDINIDAE		
Megaceryle alcyon	Belted kingfisher	*
PICIDAE		
Melanerpes lewis	Lewis's woodpecker	*
Melanerpes erythrocephalus	Red-headed woodpecker	*
Sphyrapicus thyroideus	Williamson's sapsucker	
Sphyrapicus nuchalis	Red-naped sapsucker	*
Picoides pubescens	Downy woodpecker	*
Picoides villosus	Hairy woodpecker	*
Colaptes auratus	Northern flicker	*
TYRANNIDAE		
Contopus cooperi	Olive-sided flycatcher	*
Contopus sordidulus	Western wood peewee	*
Empidonax traillii	Willow flycatcher	*
Empidonax minimus	Least flycatcher	*
Empidonax oberholseri	Dusky flycatcher	
Empidonax occidentalis	Cordilleran flycatcher	
Sayornis saya	Say's phoebe	*
Tyranus vociferans	Cassin's kingbird	
Tyrannus verticalis	Western kingbird	*

[1] Nomenclature from WGFD 2012.

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Table D9.1-1. Wildlife Species List for the Brook Coal Mine Study Area (cont.)

OBSERVED AND POTENTIAL BIRD INHABITANTS (cont.)		
Scientific Nomenclature[1]	**Common Name**	**Observed**
TYRANNIDAE (cont.)		
Tyrannus tyrannus	Eastern kingbird	*
LANIIDAE		
Lanius ludovicianus	Loggerhead shrike	*
Lanius excubitor	Northern shrike	*
VIREONIDAE		
Vireo plumbeus	Plumbeous vireo	
Vireo gilvus	Warbling vireo	*
Vireo olivaceus	Red-eyed vireo	*
CORVIDAE		
Perisoreus canadensis	Gray jay	*
Cyanocitta stelleri	Stellar's jay	
Cyanocitta cristata	Blue jay	
Gymnorhinus cyanocephalus	Pinyon jay	*
Nucifraga columbiana	Clark's nutcracker	*
Pica hudsonia	Black-billed magpie	*
Corvus brachyrhynchos	Common crow	*
Corvus corax	Common raven	*
ALAUDIDAE		
Eremophila alpestris	Horned lark	*
HIRUNDINIDAE		
Tachycineta bicolor	Tree swallow	*
Tachycineta thalassina	Violet-green swallow	
Stelgidopteryx serripennis	Northern rough-winged swallow	*
Riparia riparia	Bank swallow	
Petrochelidon pyrrhonota	Cliff swallow	*
Hirundo rustica	Barn swallow	*
PARIDAE		
Poecile atricapillus	Black-capped chickadee	*
Poecile gambeli	Mountain chickadee	*
SITTIDAE		
Sitta canadensis	Red-breasted nuthatch	*
Sitta carolinensis	White-breasted nuthatch	*
Sitta pygmaea	Pygmy nuthatch	

[1] Nomenclature from WGFD 2012.

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Table D9.1-1. Wildlife Species List for the Brook Coal Mine Study Area (cont.)

OBSERVED AND POTENTIAL BIRD INHABITANTS (cont.)		
Scientific Nomenclature[1]	**Common Name**	**Observed**
CERTHIIDAE		
Certhia americana	Brown creeper	*
TROGLODYTIDAE		
Salpinctes obsoletus	Rock wren	*
Catherpes mexicanus	Canyon wren	
Troglodytes aedon	House wren	*
Cistothorus palustris	Marsh wren	
CINCLIDAE		
Cinclus mexicanus	American dipper	
REGULIDAE		
Regulus calendula	Ruby-crowned kinglet	
TURDIDAE		
Sialia sialis	Eastern bluebird	
Sialia mexicana	Western bluebird	*
Sialia currucoides	Mountain bluebird	*
Myadestes townsendi	Townsend's solitaire	*
Catharus fuscescens	Veery	*
Catharus ustulatus	Swainson's thrush	*
Catharus guttatus	Hermit thrush	*
Turdus migratorius	American robin	*
Ixoreus naevius	Varied thrush	
MIMIDAE		
Dumetella carolinensis	Gray catbird	*
Mimus polyglottos	Northern mockingbird	
Oreoscoptes montanus	Sage thrasher	*
Toxostoma rufum	Brown thrasher	*
STURNIDAE		
Sturnus vulgaris	European starling	*
MOTACILLIDAE		
Anthus rubescens	American pipit	
Anthus spragueii	Sprague's pipit	
BOMBYCILLIDAE		
Bombycilla garrulus	Bohemian waxwing	*

[1] Nomenclature from WGFD 2012.

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Table D9.1-1. Wildlife Species List for the Brook Coal Mine Study Area (cont.)

OBSERVED AND POTENTIAL BIRD INHABITANTS (cont.)		
Scientific Nomenclature[1]	**Common Name**	**Observed**
BOMBYCILLIDAE (cont.)		
Bombycilla cedrorum	Cedar waxwing	*
PARULIDAE		
Mniotilta varia	Black-and-white warbler	
Oreothlypis peregrina	Tennessee warbler	
Oreothlypis celata	Orange-crowned warbler	
Oreothlypis virginiae	Virginia's warbler	
Setophaga petechia	Yellow warbler	*
Setophaga magnolia	Magnolia warbler	*
Setophaga coronata	Yellow-rumped warbler	*
Setophaga ruticilla	American redstart	*
Seiurus aurocapillus	Ovenbird	
Seiurus noveboracensis	Northern waterthrush	
Geothlypis tolmiei	MacGillivray's warbler	
Geothlypis trichas	Common yellowthroat	*
Cardellina pusilla	Wilson's warbler	*
Icteria virens	Yellow-breasted chat	*
THRAUPIDAE		
Piranga ludoviciana	Western tanager	*
Pheucticus ludovicianus	Rose-breasted grosbeak	
Pheucticus meloncephalus	Black-headed grosbeak	*
Passerina caerulea	Blue grosbeak	
Passerina amoena	Lazuli bunting	*
Passerina cyanea	Indigo bunting	
Spiza americana	Dickcissel	
EMBERIZIDAE		
Pipilo chlorurus	Green-tailed towhee	
Pipilo maculatus	Spotted towhee	*
Spizella arborea	American tree sparrow	*
Spizella passerina	Chipping sparrow	*
Spizella pallida	Clay-colored sparrow	
Spizella breweri	Brewer's sparrow	*
Pooecetes gramineus	Vesper sparrow	*
Chondestes grammacus	Lark sparrow	*
Amphispoza belli	Sage sparrow	
Calamospiza melanocorys	Lark bunting	*
Passerculus sandwichensis	Savannah sparrow	*
Ammodramus savannarum	Grasshopper sparrow	*

[1] Nomenclature from WGFD 2012.

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Table D9.1-1. Wildlife Species List for the Brook Coal Mine Study Area (cont.)

OBSERVED AND POTENTIAL BIRD INHABITANTS (cont.)		
Scientific Nomenclature[1]	**Common Name**	**Observed**
EMBERIZIDAE (cont.)		
Ammodramus bairdii	Baird's sparrow	
Passerella iliaca	Fox sparrow	
Melospiza melodia	Song sparrow	*
Melospiza lincolnii	Lincoln's sparrow	
Zonotrichia albicollis	White-throated sparrow	
Zonotrichia querula	Harris sparrow	
Zonotrichia leucophrys	White-crowned sparrow	*
Junco hyemalis	Dark-eyed junco	*
CALCARIIDAE		
Rhynchophanes mccownii	McCown's longspur	*
Calcarius lapponicus	Lapland longspur	
Calcarius ornatus	Chestnut-collared longspur	
Plectrophenax nivalis	Snow bunting	
ICTERIDAE		
Dolichonyx oryzivorus	Bobolink	
Agelaius phoeniceus	Red-winged blackbird	*
Sturnella neglecta	Western meadowlark	*
Xanthocephalus	Yellow-headed blackbird	*
Euphagus carolinus	Rusty blackbird	
Euphagus cyanocephalus	Brewer's blackbird	*
Quiscalus quiscula	Common grackle	*
Molothrus ater	Brown-headed cowbird	*
Icterus spurius	Orchard oriole	*
Icterus bullockii	Bullock's oriole	*
Icterus galbula	Baltimore oriole	*
FRINGILLIDAE		
Leucosticte tephrocotis	Gray-crowned rosy-finch	*
Leucosticte atrara	Black rosy-finch	
Pinicola enncleator	Pine grosbeak	*
Carpodacus cassinii	Cassin's finch	
Carpodacus mexicanus	House finch	
Loxia curvirostra	Red crossbill	*
Acanthis flammea	Common redpoll	
Spinus pinus	Pine siskin	
Spinus tristis	American goldfinch	*
Coccothraustes vespertinus	Evening grosbeak	

[1] Nomenclature from WGFD 2012.

TFN 6 2/025
RECD NOV 14, 2014

DEQ 9-022

Table D9.1-1. Wildlife Species List for the Brook Coal Mine Study Area (cont.)

OBSERVED AND POTENTIAL BIRD INHABITANTS (cont.)		
Scientific Nomenclature[1]	**Common Name**	**Observed**
PASSERIDAE		
Passer domesticus	House sparrow	*
OBSERVED AND POTENTIAL HERPTILE INHABITANTS		
AMBYSTOMATIDAE		
Ambystoma tigrinum	Tiger salamander	*
BUFONIDAE		
Spea bombifrons	Plains spadefoot toad	*
Bufo woodhousei woodhousei	Woodhouse's toad	
RANIDAE		
Lithobates pipiens	Northern leopard frog	*
HYLIDAE		
Pseudacris maculata	Boreal chorus frog	*
TESTUDINIDAE		
Apalone spinifera hartwegi	Western spiny softshell	*
Chrysemys picta belli	Western painted turtle	*
CHELYDRIDAE		
Chelydra serpentina	Snapping turtle	*
IGUANIDAE		
Sceloporus graciosus graciosus	Northern sagebrush lizard	*
Phrynosoma hernandesi	Greater short-horned lizard	*
COLUBRIDAE		
Coluber constrictor flaviventris	Eastern yellowbelly racer	*
Lampropeltis triangulum	Pale milk snake	*
Pituophis catenifer sayi	Bullsnake	*
Thamnophis elegans vagrans	Intermountain wandering	*
Thamnophis sirtalis parietalis	Red-sided gartersnake	*
Thamnophis radix	Plains gartersnake	*
CROTALIDAE		
Crotalus viridis viridis	Prairie rattlesnake	*

[1] Nomenclature from WGFD 2012.

TFN 6 2/025
RECD NOV 14, 2014

DEQ 9-023

Table D9.1-1. Wildlife Species List for the Brook Coal Mine Study Area (cont.)

OBSERVED AND POTENTIAL FISH INHABITANTS		
Scientific Nomenclature[1]	**Common Name**	**Observed**
SALMONIDAE		
Prosopium williamsoni	Mountain whitefish	*
Oncorhynchus clarki	Cutthroat trout	
Oncorhynchus mykiss	Rainbow trout	*
Salmo trutta	Brown trout	*
Salvelinus fontinalis	Brook trout	
ESOCIDAE		
Esox lucius	Northern pike	*
CYPRINIDAE		
Cyprinus carpio	Common carp	*
Carassius auratus	Goldfish	*
Notemigonus crysoleucas	Golden shiner	*
Semotilus atromaculatus	Creek chub	*
Couesius plumbeus	Lake chub	*
Platygobio gracilis	Flathead chub	*
Macrhybopsis gelida	Sturgeon chub	
Rhinichthys cataractae	Longnose dace	*
Notropis stramineus	Sand shiner	*
Hybognathus hankinsoni	Brassy minnow	
Hybognathus placitus	Plains minnow	*
Hybognathus agryritis	Silvery minnow	
Pimephales promelas	Fathead minnow	*
CATOSTOMIDEA		
Carpiodes carpio	River carpsucker	
Moxostoma macrolepidotum	Shorthead redhorse	*
Catostomus commersoni	White sucker	*
Catostomus catostomus	Longnose sucker	*
Catostomus platyrhynchus	Mountain sucker	*
ICTALURIDAE		
Ameiurus melas	Black bullhead	*
Ameiurus naulis	Yellow bullhead	*
Ictalurus punctatus	Channel catfish	*
Noturus flavus	Stonecat	*
GADIDAE		
Lota lota	Burbot	

[1] Nomenclature from WGFD 2012.

TFN 6 2/025
RECD NOV 14, 2014

DEQ 9-024

Table D9.1-1. Wildlife Species List for the Brook Coal Mine Study Area (cont.)

OBSERVED AND POTENTIAL FISH INHABITANTS (cont.)		
Scientific Nomenclature[1]	**Common Name**	**Observed**
CENTRARCHIDAE		
Micropterus dolomieui	Smallmouth bass	*
Micropterus salmoides	Largemouth bass	*
Lepomis cyanellus	Green sunfish	*
Lepomis gibbosus	Pumpkinseed	
Lepomis macrochirus	Bluegill	
Ambloplites rupestris	Rock bass	*
Pomoxis annularis	White crappie	*
Pomoxis nigromaculatus	Black crappie	*
PERCIDAE		
Stizostedion canadense	Sauger	*
Stizostedion vitreum	Walleye	*
Perca flavescens	Yellow perch	*

[1] Nomenclature from WGFD 2012.

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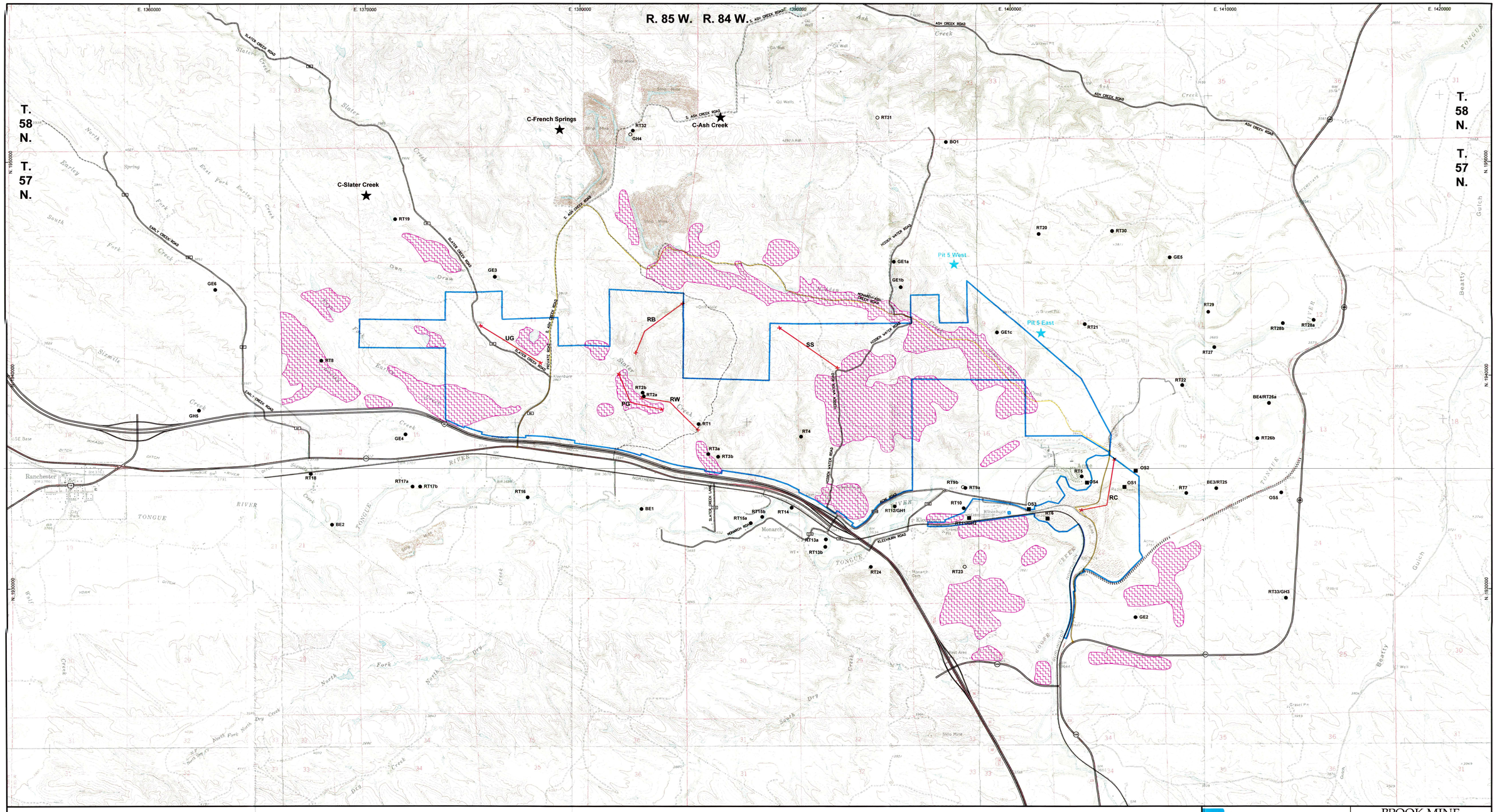
RECD NOV 14, 2014

DEQ 9-025

APPENDIX D9 EXHIBITS



LEGEND

- BROOK MINE PERMIT BOUNDARY
- INTACT RAPTOR NEST
- INTACT RAPTOR PLATFORM NEST
- FORMER RAPTOR NEST
- LAGOMORPH SURVEY ROUTE
- BREEDING BIRD SURVEY TRANSECT

BE - BALD EAGLE
GE - GOLDEN EAGLE
RT - RED TAILED HAWK
GH - GREAT HORNED OWL
BO - BURROWING OWL
OS - OSPREY

- SAGE-GROUSE LEK
- SHARP-TAILED GROUSE LEK
- BLACK-TAILED PRAIRIE DOG COLONY

PG - PRAIRIE DOG TOWN GRASSLAND
UG - UPLAND GRASSLAND
SS - SAGEBRUSH SHRUBLAND
RC - RECLAIMED LANDS
RB - ROUGH BREAKS/JUNIPER
RW - RIPARIAN WOODLAND

N

0 1,000 2,000 3,000 4,000
GRAPHIC SCALE (FEET)

RAMACO

BROOK MINE
SHERIDAN COUNTY, WY

1101 SUGARVIEW DR. STE. 201
SHERIDAN, WY 82801

REVISIONS

Date	Description
06/15	ROUND 1 COMMENTS

EXHIBIT D9.1-1

WILDLIFE INVENTORY

TFN 6 2/025
RECD JUL 30,2015

Drawn By: MBM/RET
Checked By: JGB/JEO
Date: 10/17/14

WWC ENGINEERING
www.wwcengineering.com

FILE: D9-1_WILDLIFE_INV.dwg

K:\Sheridan\RAMACO\13139\ACAD_WY\DEC\DWGS_D9_RESPONSE\D9-1_WILDLIFE_INV.dwg - 6/30/2015 8:36 AM Allen Johnson

ADDENDUM D9-1

Exhibit D9.1-2 Sheet 1 of 2

Jeff

This has been sent to Cheyenne and they have my comments concurring that the proposed project area is outside designated sage-grouse core areas.

You should get a letter to that affect sometime late next week.

TIM

On Fri, Oct 31, 2014 at 9:36 AM, jbarron <jbarron@wwcengineering.com> wrote:
Tim,

Thank you for allowing time for a brief meeting this morning. As we discussed, I am providing the map I shared with you today 10/31/2014 showing the known core areas in relation to our project area. I am respectfully requesting a letter in confirmation of your verbal comments today that our project area is not within a Sage Grouse core area and not within a half mile of known LEK's.

Thanks again.

Jeff Barron, P.E. | Project Manager

1849 Terra Avenue | Sheridan, WY 82801

Tel 307-672-0761 | Cell 307-751-1427

www.wwcengineering.com

-

Tim Thomas, Certified Wildlife Biologist
Wyoming Game and Fish Department
Sheridan Wildlife Biologist
700 Valley View Drive
Sheridan, WY 82801
(307) 672-7418
Tim.Thomas@wyo.gov

http://wgfd.wyo.gov

E-Mail to and from me, in connection with the transaction of public business, is subject to the Wyoming Public Records Act and may be disclosed to third parties.

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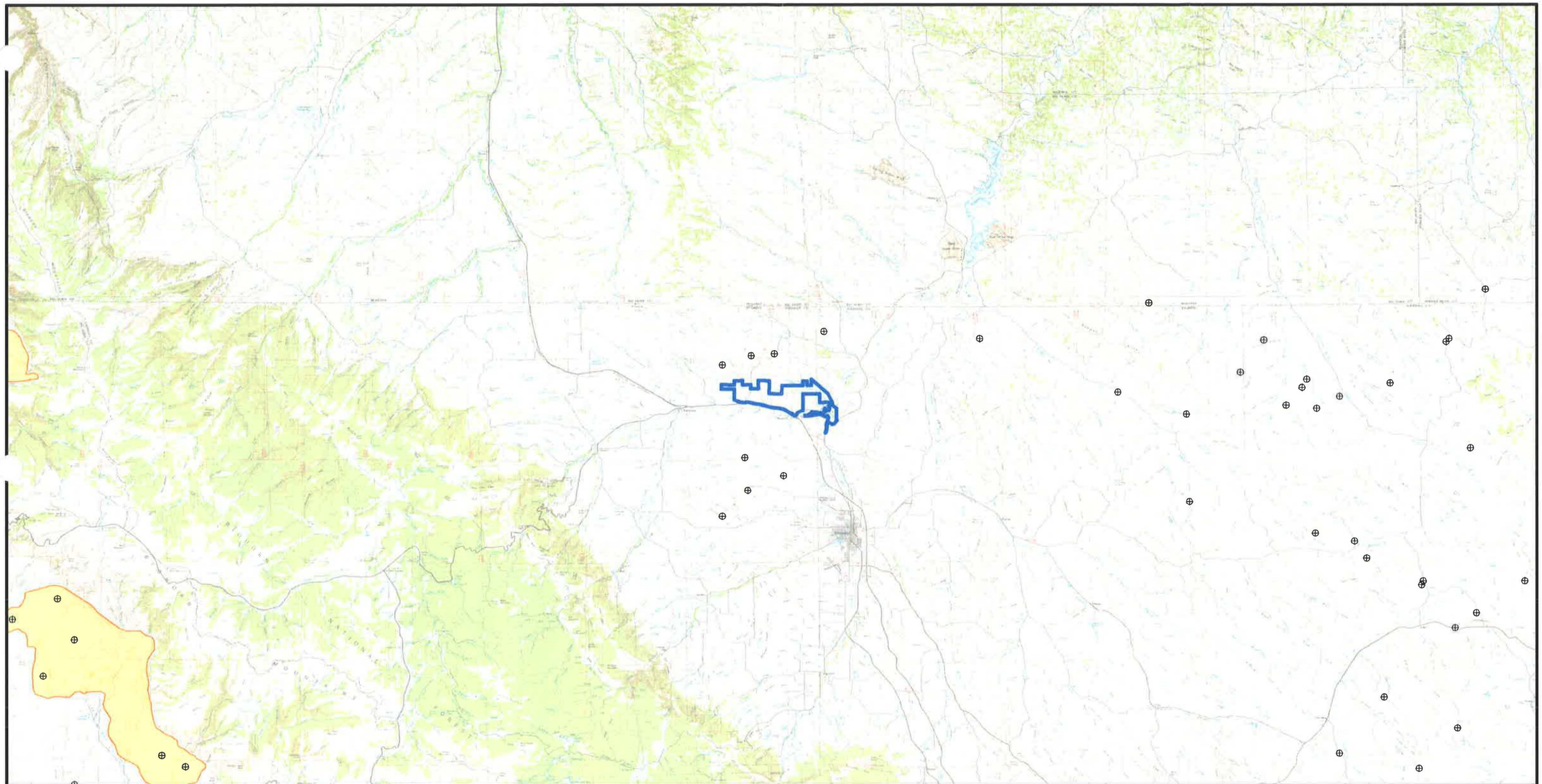
RECD NOV 14,2014



LEGEND

BROOK MINE PERMIT BOUNDARY

SAGE GROUSE CORE AREA

SAGE GROUSE LEK

TFN 6 2/025
RECD NOV 14, 2014

0 15,000 30,000
GRAPHIC SCALE (FEET)

RAMACO

BROOK MINE
SHERIDAN COUNTY, WY

1101 SUGARVIEW DR STE. 201
SHERIDAN, WY 82801

REVISIONS	
Date	Description

EXHIBIT 9.1-2

SHEET 2 OF 2

SAGE GROUSE LEKS AND CORE AREAS

Drawn By: CIG
Checked By: JGB
Date: 10/30/14

FILE: SAGEGROUSE_WGF.dwg

WWC ENGINEERING
www.wwcengineering.com

K:\Sheridan\RAMACO\13139\ACAD_WY83E\DWGS :_D9\SAGEGROUSE_WGF.dwg 10/31/2014 12:29:26 PM condia.gonzales

October 2014

D9-E2

RAMACO

Brook Mine

WYOMING GAME AND FISH DEPARTMENT

5400 Bishop Blvd. Cheyenne, WY 82006
Phone: (307) 777-4600 Fax: (307) 777-4699
wgfd.wyo.gov

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T. CARRIE LITTLE

October 31, 2014

WER 13541
WWC Engineering
WWC Sage Grouse Core Areas
Sheridan County

Jeff Barron
Project Manager
1849 Terra Ave
Sheridan, WY 82801

Dear Mr. Barron:
The staff of the Wyoming Game and Fish Department (WGFD) has reviewed the WWC Sage Grouse Core Areas Project in Sheridan County concerning the Brook Coal Mine. We offer the following comments for your consideration.

The entirety of the project lies outside of Sage-grouse core area. However, there are two leks, Ash Creek and Slater Creek, which lie within the two mile lek buffer for non-core area. We recommend avoiding initial development activity during the seasonal stipulation time of March 15 – June 30 to avoid disrupting lekking, nesting and brood rearing sage-grouse in the area. It would be best to start activity outside this time frame, and, once started, activity may continue without interruption.

Thank you for the opportunity to comment. If you have any questions or concerns, please contact Linda Cope, Staff Terrestrial Biologist, at 307-777-2533.

Sincerely,

Scott Carr
for John Kennedy
Deputy Director

JK/mf/ns

cc: USFWS
Chris Wichmann, Wyoming Department of Agriculture, Cheyenne
Tim Thomas, WGFD, Sheridan Region

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RECD NOV 14, 2014

ADDENDUM D9-1

Baseline Wildlife Inventory

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DEQ 9-032

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Attachment D9-1-B Correspondence

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DEQ 9-035

D9-1 WILDLIFE INVENTORY

D9-1.1 Executive Summary – Brook Mine

Detailed wildlife inventories covering the full suite of studies as required by state and federal regulatory agencies were completed for the Brook Mine Baseline Study Area in 2013 and 2014 by Intermountain Resources (Laramie, Wyoming). The study area included the mine permit area and one to two mile perimeter for selected wildlife species as discussed in this report.

D9-1.2 Introduction

The Brook Mine is located in Sheridan County, Wyoming north of the town of Sheridan. The Brook Mine permit area is specifically located in Sections 7, 8, 9, 10, 15, 17, 18, 20, 21, 22 and 27 of Township 57 North, Range 84 West and Sections 10, 11, 12, 13, 14 and 15 of Township 57 North, Range 85 West. This wildlife baseline inventory includes all of the Brook Mine permit area of approximately 4,548.8 acres. Wildlife inventories included a minimum of surveying a one to two mile buffer surrounding these lands for selected species where access was provided. The purpose of this report is to provide the required wildlife baseline information which includes the 2013-2014 field surveys, data from prior baseline inventories completed in the area and other surveys completed by state and federal agencies or other entities. The permit area location is shown on Addendum D9-1 Exhibit 1.

The wildlife species with the potential to be found on the Brook Mine or surrounding lands are presented in the list in Attachment D9-1-A. This list also identifies the species actually observed in the area and provides both the common and scientific names for all species.

A wildlife survey plan for this project was submitted to the Wyoming Game and Fish Department (WGFD) and US Fish and Wildlife Service (USFWS) for approval. The plan and response letters are provided in Attachment D9-1-B (Correspondence) of this report.

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DEQ 9-036

The majority of the mining to be completed at the Brook Coal Mine will be underground in nature. Operations will be conducted by first exposing the coal seam and then mining the seam underground using an auger. Therefore actual surface disturbance will be kept to a minimum.

D9-1.3 Background

The Brook Mine permit area includes lands that were part of the original Big Horn Coal Mine permit No. 213. Baseline wildlife inventories were completed for the Big Horn Coal Mine in the mid 1970's and early 1980's. Wildlife monitoring inventories have been conducted yearly for the Big Horn Coal Mine from the 1980's through 2014. These surveys generally included the permit area and one to two mile perimeter. Baseline wildlife inventories were also completed for the Youngs Creek Coal Mine permit No. 407 and the Welch No. 1 Coal Mine permit No. 497 and one to two mile perimeters surrounding those mine permit areas. Those wildlife survey areas covered portions of the Brook Coal Mine survey area.

The major habitat type on the Brook Mine is upland grassland followed by sagebrush shrubland, rough breaks mixed shrub and reclaimed lands. Habitat or other land use types occupying smaller acreages include juniper woodland, riparian woodland, hayland, currently disturbed land and stockponds.

D9-1.4 Methods

The methods included in this section pertain to specific field surveys conducted in 2013-2014 for the Brook Mine. Much of this study area has also been inventoried during surveys conducted for the Youngs Creek Mine permit No. 407, the Big Horn Coal Mine permit No. 213 and the Welch No.1 Mine permit No. 497 with the adjacent one to two mile perimeters for these permit areas. Those surveys included baseline inventories and subsequent monitoring completed from 1975 through 2014. Detailed methods of those surveys are included in Appendix D9 and annual monitoring reports for the Youngs Creek,

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DEQ 9-037

Welch No. 1 and Big Horn Coal Mines. Pertinent data from those studies are also included in this report as agreed upon with the WGFD and USFWS.

D9-1.4.1 Big Game Surveys

Specific big game surveys were not required in 2013 or 2014 on the Brook Mine study area as agreed upon with the Wyoming Game and Fish Department. Big game ranges and any crucial ranges as mapped by the WGFD were determined and are presented. Incidental observations of big game habitat use are discussed for individual species observed.

D9-1.4.2 Upland Game Birds

Surveys for strutting sage-grouse and sharp-tailed grouse for this permit area and two mile perimeter were completed on six mornings at dawn in April and early May of 2013 and on six mornings at dawn in April and early May of 2014. Dates of lek surveys and lek counts are included in the results section of this report. Counts were made for any leks (sage-grouse and sharp-tailed grouse) known to occur and for any new leks discovered in the study area. Specific production surveys were not completed as agreed upon by the WGFD, but incidental observations of seasonal use and any broods observed were recorded and will be discussed. Searches were completed by driving on roads and using ATV's, stopping frequently to scan and listen for displaying sounds. Observations of sage-grouse made during other seasons or surveys were also recorded and winter occurrence was documented if observed. Ten years of data were compiled and presented for each sage-grouse lek when that data was available.

D9-1.4.3 Raptors

Raptor nests located, on the permit area and within two miles, during previous inventories were documented and plotted on maps. These nests were inventoried in the field as access permitted and searches for new nests were completed in April through May of 2013 and February through May of 2014.

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Nest surveys were also completed to determine whether nest sites were occupied by nesting birds. Nests were observed at sufficient distances so that incubating birds were not disturbed.

Active nests were again inspected during the summer surveys (June-August) of 2013 and 2014 to determine nesting success. Potential nesting habitat was resurveyed at this time for the presence of any late nesting species. The number of young present in each active nest was determined only when possible to do so without causing excessive disturbance.

Rccords were kept of all bald eagles observed during the winter roost surveys. All other raptors seen during wildlife surveys were also documented and included in the wildlife species list.

D9-1.4.4 Waterfowl and Shorebirds

Specific waterfowl and shorebird surveys were conducted in 2013 and 2014. Stockponds and other bodies of water within the permit area were surveyed to determine waterfowl use and production.

Waterfowl and shorebirds were also noted during all other survey periods when they were observed on the study area. Records of waterfowl use of the waterbodies within the study area were also documented during previous surveys. Data was obtained from those prior surveys as applicable to this inventory. Additional data was collected from the opportunistic observations in 2013 and 2014 and areas of major waterfowl production were identified, if present.

D9-1.4.5 Mammalian Predators

Numerous predator surveys have been completed in the area and vicinity during prior mine permitting activities. Surveys were conducted during the night using spotlights and vehicle headlights, surveys were conducted using scent stations and surveys were conducted during daylight hours by walking various habitat types searching for predators or sign. Opportunistic

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observations of predators encountered in 2013 and 2014 were also recorded. The summaries of those surveys are presented in the results section of this report.

D9-1.4.6 Lagomorphs

Specific lagomorph surveys were completed for the Brook Mine on July 11 of 2013 and August 7 of 2014. Surveys were conducted right after dusk by driving selected routes and counting all lagomorphs illuminated by the vehicle headlights. Approximately 10.0 miles (16.0 kilometers) of roads were covered during these surveys. The lagomorph survey route is shown on the wildlife inventory map (Addendum D9-1 Exhibit 1).

D9-1.4.7 Passerine Birds

Passerine bird surveys were completed in dominant habitat types on the Brook Mine in 2013 and 2014. Surveys were conducted by walking belt transects 1000 meters long by 100 meters wide. All birds observed or heard calling within these transects were recorded. Surveys were completed between one-half hour before sunrise and 9:30 AM. These breeding bird surveys were completed on June 11 and June 26 of 2013 and May 28 and June 13 of 2014. Opportunistic observations were also recorded for birds seen or heard during other surveys conducted in 2013 and 2014.

Numerous breeding bird surveys were conducted for the Big Horn Coal Mine and other mines in the area. The results of those surveys will be included in the results section of this report as applicable.

D9-1.4.8 Small Mammals

Due to the abundance of data collected from prior small mammal trapping and other surveys completed on this area and in the vicinity for the Big Horn, Welch No. 1 and Youngs Creek Coal mines, specific small mammal surveys were not required for this project. The prior data collected will be discussed in the results section. Any new or additional species observed

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during the 2013-2014 field surveys for the Brook Mine will be discussed and are included on the wildlife species list

D9-1.4.9 Threatened or Endangered (T&E) Species and Other Species of High Federal or State Interest

Throughout all phases of wildlife survey work completed in 2013 and 2014 special vigilance was maintained for any evidence of species listed as rare, threatened or endangered by the state (Wyoming) or federal (US Fish and Wildlife Service) governments. The USFWS Wyoming website was periodically checked to determine listing or status changes for T&E or species of concern.

Black-tailed prairie dog towns within the permit area were mapped in 2013-2014. Black-footed ferret surveys were not conducted in any prairie dog towns within the study area. This was because in February of 2004 the USFWS Ecological Services Office in Cheyenne, Wyoming, issued a letter stating "black-footed ferret surveys are no longer necessary in black-tailed prairie dog colonies state wide" (USFWS, 2004). Since only black-tailed prairie dog colonies are present within the Brook Mine study area, no black-footed ferret surveys are required.

Bald eagle winter roost surveys were completed in February of 2014 specifically for the Brook Mine study area. Suitable roost habitat was surveyed at dawn and dusk. Similar surveys were completed on the study area in prior years by the Big Horn Coal Mine.

Searches for rare, threatened or endangered species have also been conducted on the Big Horn Coal Mine permit No. 213 area since initial baseline surveys were conducted in 1976. Surveys for species of concern continued throughout yearly wildlife monitoring events.

In 2013 and 2014, the required surveys were completed for T&E, Migratory Birds of High Federal Interest (MBHFI) and state listed species which have the potential for inhabiting the site. These surveys were completed in conjunction with all other wildlife surveys and species specific surveys were

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completed at other times as required. Surveys for the Ute ladies'-tresses orchid, listed as threatened, were completed as described in Appendix D8.

D9-1.4.10 Reptiles and Amphibians

No specific surveys were completed for reptile or amphibian species on the study area in 2013 or 2014 except traversing suitable habitats during the course of other field work. Surveys have also been completed previously for the three local mine permit study areas. This area does not have a high density of such species. All reptile and amphibian species observed during surveys completed on the area in 2013-2014 were documented.

D9-1.4.11 Aquatics

The Brook Mine permit area was surveyed for potential aquatic habitat and very little of that habitat was found. Only a small portion of stockpond/water habitat is present and this is comprised primarily of stockponds observed within the permit area that contain water with any frequency. Those stockponds do not provide suitable habitats for viable fisheries but do provide amphibian habitat.

The Tongue River should not be affected since this waterway is located outside of the permit area except for an existing bridge crossing. Since this bridge is already constructed and will not require any modifications, the Tongue River will not be disturbed. Goose Creek is also located outside of the permit area so no disturbance is proposed for this waterway. Since disturbances will not occur in the Tongue River or Goose Creek their aquatic systems were not sampled in this study. Data from prior samplings of these drainages is included in the results section for background information. The WGFD has additional information on these drainages from their samplings.

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Portions of Slater Creek, Early Creek and some of their tributaries cross the Brook Mine and may be affected. These are ephemeral streams and do not provide fisheries so they were not sampled.

D9-1.4.12 Wildlife Habitats and Affinity

Data collected in 2013 and 2014 for each class of wildlife was used for habitat affinity determinations. Habitat affinities for wildlife species on the study area were also determined using data collected previously. All wildlife habitat types within this study area have been previously inventoried during surveys completed for the other three coal mines present within this study area. Wildlife habitat acreages were calculated and descriptions were developed.

D9-1.5 Results and Discussion

D9-1.5.1 Big Game

No specific big game surveys were completed during the 2013 and 2014 wildlife surveys conducted for the Brook Mine permit area as agreed upon with the WGFD. Mule deer, pronghorn and white-tailed deer were the only big game species commonly observed on this study area in 2013 and 2014. These observations were consistent with surveys completed in previous years by other mines in the area. Local landowners indicated the American elk was uncommonly observed in the area and the moose has been observed along the Tongue River.

Based on previous data and the 2013-2014 observations, mule deer were the most common big game species recorded on the area during all seasons. Habitats that mule deer were commonly associated with were sagebrush shrublands, rough breaks, juniper woodland and riparian woodland. This permit area is considered by the WGFD to be primarily mule deer winter yearlong range. Mule deer are commonly found on this area throughout the

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year. No crucial mule deer winter range has been delineated within the Brook Mine permit area

Pronghorn were recorded on this area in limited numbers throughout the year. Pronghorn were most commonly associated with the sagebrush shrubland and upland grassland habitats. The WGFD has classified a majority of the area as yearlong range while a very small portion of the area is classified as out of normal pronghorn use. Single and doe/fawn pronghorn were typically observed during the summer while small groups (<25) are observed during the spring and fall.

White-tailed deer were commonly observed on the area during all seasons. Habitats frequented were riparian woodlands, haylands, reclamation and pine and juniper woodlands. A portion of the permit area is considered by the WGFD to be yearlong white-tailed deer range while the remainder is considered out of the normal use of this species. The yearlong white-tailed deer range is delineated primarily along Early Creek, Slater Creek, Goose Creek and the Tongue River.

The Brook Mine permit area is considered out of the normal range for elk and moose. However both elk and moose have infrequently been observed in the area by local ranchers.

D9-1.5.2 Upland Game Birds

Six species of upland game birds were recorded on this study area during the previous inventories and the 2013-2014 wildlife surveys. These species were the mourning dove, sage-grouse, sharp-tailed grouse, gray partridge, wild turkey and ring-necked pheasant. These upland game bird species are all generally expected to be found in this area. A seventh species, the chukar partridge, was recorded once and is not common in this area.

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Sage-grouse lek and sharp-tailed lek surveys were completed early in the morning (1/2 hour prior to sunrise to about one hour after sunrise) on April 3, 4, 5, 25 and 26 and May 9 of 2013 and April 3, 4, 16 and 18 and May 2 and 3 of 2014. The permit area and two mile perimeter were surveyed where access was allowed.

Several sage-grouse leks are located within this study area and survey results from 2003 through 2014 are shown in Table D9-1. The locations of these lek sites are identified on Addendum D9-1 Exhibit 1. None of these sage-grouse leks are located within the Brook Mine permit area or within one mile. The Brook Mine is not situated within a designated sage-grouse core or connectivity area.

The Ash Creek Lek is located over one mile north of the permit area (NWSW4 of Section 31, T58N, R84W) and was first recorded in 1967. The maximum number of males using this lek during any one year from 2003 through 2014 was 12 in 2005 as shown in Table D9-1. That was the only year the Ash Creek lek was active from 2003 through 2014. In 2013 a powerline was constructed adjacent to this lek most likely impacting future use of the site.

The French Springs lek site is located about 1 ½ miles north of the mine permit area in the SESE4 of Section 35, T58N R85W. This lek site was first identified in 1988 but no birds have been observed there in 2003 through 2014 although 34 separate surveys were conducted during that period. In fact the WGFD database indicates no birds have been observed at this lek site since 1988, the year of discovery. Sagebrush was removed from the site and adjacent lands through chemical control by the Padlock Ranch. Therefore it appears the French Springs lek may have been destroyed because the sagebrush cover necessary for forage and to protect birds roosting near the lek has been removed and the entire lek site and surrounding area is currently upland grassland.

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The Slater Creek lek is located a little over one mile north of the Brook Mine permit area in the SWNW4 of Section 3, T57N R85W. This lek was identified in 1967 and has had strutting males in all years surveyed since that time. According to the WGFD database the peak count for this lek was in 1978 when 79 males were recorded. Survey data from 2003 through 2014 for the Slater Creek Lek is provided in Table D9-1. During that period the highest number of males was recorded in 2006 when 20 birds were observed. Numbers have steadily declined from that time to only one male observed in 2014.

Sage-grouse brood surveys were not required as agreed upon by the WGFD. Opportunistic sightings of sage-grouse broods have been recorded in past studies on the area but none were observed on the study area in 2013 or 2014. Sage-grouse have not been recorded on the study area during winter surveys.

Sharp-tailed grouse were occasionally observed in the study area during the 2013-2014 surveys and two active sharp-tailed grouse leks were recorded during this period. The Pit 5 West lek is located in the SESW4 of Section 4, T57N R84W on lands reclaimed by the Big Horn Coal Mine. The Pit 5 East lek is located in the NWSW4 of Section 10, T57N R84W and is also established on lands reclaimed by the Big Horn Coal Mine. These lek sites are shown on Addendum D9-1 Exhibit 1. Table D9-2 provides the 2013-2014 survey data for these two active leks. Other sharp-tailed grouse leks had previously been identified in the area but none were active in 2013 or 2014. Sharp-tailed grouse were commonly observed on reclaimed habitats at the Big Horn Coal Mine and were also common on upland grassland and AML reclamation in the area.

Mourning doves were common on the study area during summer months. They were most abundant on reclaimed areas and adjacent to water during those times. Mourning doves have been recorded nesting on the study area in past studies and during 2013-2014. This species is commonly

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observed throughout the nesting season and utilizes all habitats. This species migrates out of the area for the winter.

The gray partridge has been inconsistently observed on the study area over the past several years. The gray partridge is generally associated with upland grassland habitats, agricultural lands, and reclamation.

The wild turkey has been commonly observed on the study area during all past surveys. The wild turkey is not native to this area but was transplanted here from other locations. No specific surveys, other than opportunistic observations, have been completed for this species on any of the mine sites in the past. This species is typically associated with riparian woodland and ponderosa pine habitats during the spring and summer while during the fall and winter they are associated with riparian woodland and agricultural lowland habitats. Wild turkeys winter in flocks primarily along Goose Creek and the Tongue River but can also be found along some of the minor drainages.

Ring-necked pheasants, an introduced species, were also commonly observed on some portions of the study area. Ring-necked pheasants are typically associated with the riparian woodland and agricultural habitats. The WGFD annually stocks ring-necked pheasants for hunting on walk in areas and public lands along the Tongue River and other locations with the study area. However, resident populations are also present along Goose Creek and the Tongue River. These resident populations are maintained primarily on agricultural lands.

The chukar partridge was observed along Goose Creek just upstream of the permit area. This species is generally not present in the area and the observed birds were most likely released for hunting.

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D9-1.5.3 Raptors

In 2013-2014, a total of 9 intact raptor nests were located within the permit area while another 50 intact nest sites were located within two miles.

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Of the 59 total nest sites, six (6) had been constructed for mitigation of nest sites removed by mining on adjacent areas or due to powerline conflicts. The raptors known to nest on, or within, two miles of the permit area include the bald eagle, golden eagle, red-tailed hawk, great horned owl, burrowing owl, and osprey. All raptor nest sites are shown on Addendum D9-1 Exhibit 1 and nesting information on these sites for 2013-2014 is provided in Table D9-3. Production details for previous years on nests monitored by various mines, with take and mitigation measures completed on the area, are included in the various annual mine reports submitted yearly for each of the corresponding mines (Youngs Creek, Welch No. 1 and Big Horn Coal).

Other raptors were observed in the area but were not recorded nesting on the site. These additional raptors recorded are listed on the species list in Attachment D9-1-A.

As shown in Table D9-3 the red-tailed hawk was the most productive raptor nesting on the study area. Within the study area in 2014, there were three active bald eagle nest sites with a combined known production of four young, there were four active golden eagle nest sites with a combined production of three young, there were 16 active red-tailed hawk nest sites with a combined production of 19 young, there were three active great horned owl nest sites with a combined production of five young, there was one active burrowing owl nest site which produced four young, and finally there were three active osprey nest sites with a combined production of six young. The total number of young produced in 2014 from the 30 active nests sites was 41. According to the data, about 50 percent of the intact nest sites identified were active on the study area in 2014. Overall raptor nest occupancy in 2014 was about the same as 2013 but production in 2014 was much higher than 2013.

D9-1.5.4 Waterfowl and Shorebirds

Specific waterfowl and shorebird surveys completed during 2013-2014 and prior surveys on this study area documented a total of 44 species. These

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species are all reported on the species list in Attachment D9-1-A of this report. The greatest diversity overall was observed adjacent to the permit area along the Tongue River and Goose Creek as well as the Pit 3 reservoir located on Big Horn Coal mine reclamation northeast of the Brook Mine. Waterfowl production was significant at the Pit 3 reservoir northeast of the permit.

Waterfowl habitat is very limited within the permit area itself. The primary waterfowl habitat within the permit area was provided by stockponds. Slater Creek and Earley Creek provide minimal habitat due to their narrow incised channels and inconsistent ephemeral flows. Few waterfowl were observed on these water bodies during the spring and summer surveys when most of them contained water. The most common species observed within the permit area were the Canada goose, mallard, Gadwall, American widgeon and killdeer. No significant waterfowl production was observed on these sites in 2013 or 2014.

D9-1.5.5 Mammalian Predators

The total number of carnivores observed within the Brook Mine permit area or adjacent lands during the 2013-2014 surveys and prior inventories was 11. These species are identified on the list in Attachment D9-1-A. The most common predator observed was the coyote but the badger, striped skunk and raccoon also appeared to be fairly common. Black bears were observed on or adjacent to the permit area in both 2013 and 2014 as well as prior years. The wolf has been observed along the base of the Big Horn Mountains west of the permit area and may pass through the mine site. The black-footed ferret has never been recorded in the area. The mountain lion and bobcat are occasionally observed in the area and are considered residents.

D9-1.5.6 Lagomorphs

Lagomorph night surveys were completed for the Brook Mine on July 11 of 2013 and August 7 of 2014. Approximately 10 miles were covered by vehicle during each survey event using the headlights to spot and identify lagomorphs.

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The survey route is shown on Addendum D9-1 Exhibit 1. The white-tailed jackrabbit and cottontail rabbit were the only lagomorphs identified in the area.

In 2013 four cottontail rabbits and three white-tailed jackrabbits were observed along the survey route for a total density of 0.7 lagomorphs per survey mile. In 2014 three white-tailed jackrabbits and one cottontail rabbit were recorded along the survey route for a total density of 0.4 lagomorphs per survey mile. Lagomorph numbers appeared to be slightly lower in 2014 than 2013 in this area.

D9-1.5.7 Passerine Birds

Passerine bird surveys were completed in 2013 and 2014 by walking belt transects 1000 meters long by 50 meters wide. All birds seen and heard within these transects were recorded. The major habitats of upland grassland, sagebrush shrubland and rough breaks/juniper were sampled in 2013. The reclaimed land, prairie dog town grassland and riparian woodland habitats which comprise less acreage were sampled in 2014. Breeding bird transect locations are shown on Addendum D9-1 Exhibit 1.

The results of the 2013-2014 breeding bird transects are shown in Table D9-4. In all, a total of 38 different bird species were recorded along the various transects. Overall the western meadowlark and lark sparrow were most common and consistently observed over all habitats. The riparian woodland habitat type exhibited the greatest abundance and diversity of species while the least diversity was recorded in the sagebrush shrubland habitat.

Numerous other bird species have been recorded on or in the vicinity of the Brook Mine. All bird species recorded during the 2013-2014 inventory and prior surveys are presented on the species list in Attachment D9-1-A. Breeding bird survey data collected in the vicinity for other mine permit areas is presented in Tables D9-5 through D9-10. Additional details on those other surveys are contained in the respective mine permits referenced.

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D9-1.5.8 Small Mammals

The black-tailed prairie dog was the most common small mammal observed on the study area. Black-tailed prairie dog colonies on and immediately adjacent to the permit area were mapped in 2013 and 2014. These prairie dog colonies are shown on Addendum D9-1 Exhibit 1. The porcupine, muskrat, yellow bellied marmot and northern pocket gopher or sign of these species were also commonly observed.

Tables D9-11 through D9-14 show the efforts of small mammal trapping completed by the various mines in the area. Details of their specific sampling methodologies are provided in the mine permits referenced. Overall the deer mouse was the most common species captured. Other species commonly encountered include the least chipmunk, thirteen-lined ground squirrel and bushy-tailed wood rat. A list of all the small mammals encountered in the area is provided in Attachment D9-1-A.

D9-1.5.9 Threatened or Endangered Species and Other Species of High Federal or State Interest

Species officially designated by the United States government as threatened or endangered are listed in the Federal Register and afforded protection under the Endangered Species Act of 1973 (ESA). As of August 2014, the US Fish and Wildlife Service (USFWS) has determined the greater sage-grouse (Candidate species), Canada lynx (Threatened species), and Ute ladies'-tresses (Threatened species) may be impacted by projects in Sheridan County of Wyoming.

The Ute ladies'-tresses is a plant species and was addressed in Appendix D8 Vegetation. BKS conducted surveys in July of 2013 but did not find that plant species.

The Canada lynx requires mountainous forest habitat. Those types of habitats for this species are not found on or near the Brook Mine so the Canada lynx should not be affected by this operation.

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The sage-grouse has been documented in the study area as discussed in Section D9-1.4.2 of this report. Sage-grouse leks were not found on the Brook Mine permit area. The nearest sage-grouse lek is a little over one mile from this permit area. Sagebrush shrublands, which is the primary habitat for this species, are present within the mine permit area and will be affected by mine operations. The Brook mine is not located in a designated sage-grouse core area.

As of October 2, 2013 the northern long-eared bat (*Myotis septentrionalis*) was proposed for listing under the ESA as an endangered species. This bat requires forested habitats for roosting and foraging and has only been found in Wyoming in the extreme northeastern corner in the forests of the Black Hills. Suitable habitat for the northern long-eared bat is not present on the Brook Mine.

The current USFWS list of Migratory Bird Species of Conservation Concern is provided in Table D9-15. The American bittern has not been recorded in the mine permit area and the site provides marginal habitat for this species. The American bittern may be found in more suitable habitats near the Brook Mine but was not observed during wildlife surveys.

The bald eagle is common in the area as a winter migrant and breeder. Bald eagles are commonly observed along the Tongue River and Goose Creek in the winter but tend to be scattered with few high concentration roost areas. Bald eagles also breed and nest near the mine site but not within the permit area as discussed in Section D9-1.4.3 of this report.

The black rosy-finch and Cassins finch have not been recorded in this area These species would most likely not breed in the area but there is a higher possibility they could be present in the winter.

The Brewer's sparrow is generally common in sagebrush shrubland habitats as a breeder but does not appear to be abundant. This species was

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generally observed during most of the breeding bird surveys conducted in suitable habitats.

One pair of burrowing owls nested north of the Brook Mine in 2013 and 2014 as discussed in Section D9-1.4.3 of this report. This pair nested in a prairie dog burrow. Prairie dog towns are common within and adjacent to the Brook Mine permit area so burrowing owl nesting habitat is also common. These prairie dog towns were surveyed in 2013 and 2014 but new nesting burrowing owl pairs were not observed.

The ferruginous hawk has been uncommonly observed in the study area as a transient. This species has not been recorded nesting in the area after 30 years of baseline inventories and monitoring.

The golden eagle nests in the study area as discussed in Section D9-1.4.3 of this report. Only one golden eagle nest is present within the permit area and that nest was occupied in 2013 but did not produce any young. That nest was not active in 2014.

Grasshopper sparrows were observed in upland grassland habitat in the western portion of the Brook Mine permit area during the 2013 breeding bird surveys. This species was not observed during any of the other breeding bird surveys so was not common in the area and had a definite affinity for the upland grassland habitat types.

The greater sage-grouse was discussed previously in this section as a Candidate species and was also addressed as an upland game bird in Section D9-1.4.2 of this report. Sage-grouse are present in the area but no longer appear to be common.

Mountain plovers were not recorded during the specific 2013 and 2014 surveys conducted on the site. Habitat in the form of black-tailed prairie dog colonies was abundant. No mountain plovers were recorded on adjacent lands either.

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The pinyon jay was not recorded during the 2013 or 2014 surveys but had been previously identified in the vicinity. This species would most likely be a transient through the area and is currently considered uncommon.

The prairie falcon has been observed in the study area as a transient. Suitable nesting habitat in the form of cliffs or large rock outcrops is not present on the Brook Mine. Suitable falcon nesting habitat is also generally uncommon in the vicinity of the permit area.

Williamson's sapsuckers have not been observed on the Brook Mine or adjacent lands. This species is considered a breeder in the area but suitable habitat is limited on the mine site.

The willow flycatcher has been recorded as a breeder in the area. This species does not appear to be common but was observed during the 2014 breeding bird surveys as well as prior bird surveys conducted in the vicinity.

D9-1.5.10 Reptiles and Amphibians

The species list in Attachment D9-1-A shows that 16 amphibians and reptiles were observed on the Brook Mine site and vicinity. The boreal chorus frog was heard calling at all the stockponds within the permit area. The leopard frog was also observed but did not appear to be abundant like the chorus frog. Garter snakes appeared to be common in wetter areas while rattlesnakes and bull snakes were observed primarily on uplands. The painted turtle and snapping turtle were observed in a few large ponds.

D9-1.5.11 Aquatics

According to the WDEQ-Water Quality Division, the adjacent Tongue River and Goose Creek are classified as Class 2AB waters. The 2AB classification of these waters indicates that they are suitable for drinking water, game fish, non-game fish, fish consumption, other aquatic life, recreation, wildlife, agriculture, industry and scenic value. The WDEQ-Water Quality Division has classified Slater Creek and Earley Creek as Class 3B waters. The

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classification 3B of these waters indicates that they are not suitable for drinking water or fish but are suitable for other aquatic life, recreation, wildlife, agriculture, industry and scenic value. Detailed descriptions of all drainages within the permit area are presented in Appendix D6 of this permit.

Representative aquatic data collected in the past for the Tongue River and Goose Creek are presented in Tables D9-16, D9-17 and D9-18. As mentioned previously these drainages will not be disturbed by mining activities.

D9-1.5.12 Wildlife Habitats and Affinity

The wildlife habitat types identified on the study area (Table D9-19) are generally consistent with the vegetation map units described and mapped in Appendix D8 and the wetlands presented in Appendix D10 for this permit area.

The top four major habitat types encountered on the permit area were upland grassland, sagebrush shrubland, rough breaks mixed shrubland and reclaimed lands as shown in Table D9-19. Four other habitat types comprising much less acreage were also identified on this area. Those four types were juniper woodland, riparian woodland, hayland and stockpond/water habitats. Appendix D8 and Appendix D10 provide detailed descriptions of these habitat types along with mapping showing locations. Brief descriptions of these types are provided here.

Upland Grassland

The upland grassland habitat type is the largest type found on this area. The upland grassland habitat type included two sub-unit types that consist of the Prairie Dog Modified Grassland and the Scoria Grassland. This community is rangeland dominated by native graminoids and forbs. Typically, grasses include western wheatgrass, (*Pascopyrum smithii*), green needlegrass (*Nassella viridula*), needleandthread (*Stipa comata*), prairie junegrass (*Koeleria macrantha*), blue grama (*Bouleloua gracilis*) and threadleaf sedge (*Carex filifolia*). Shrubs and subshrubs are essentially absent from the upland

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grassland community. Prickly pear cactus (*Opuntia polyacantha*) is found throughout this habitat type in varying densities. Introduced annual grasses are found throughout the upland grassland habitats with varying contribution to cover. In limited areas, crested wheatgrass (*Agropyron cristatum*) from various seedings has established itself in this community. This community generally occurs on gentle slopes or flatlands. The Prairie Dog Modified sub-unit typically has more annual grasses such as cheatgrass (*Bromus tectorum*) and annual forbs such as mustard species (*Descurainia* sp.) due to overgrazing and other disturbances caused by the prairie dogs. The scoria grassland subunit has bluebunch wheatgrass (*Pseudoroegneria spicata*) as a dominant in some areas.

Sagebrush Shrubland

The sagebrush shrubland habitat type is the second largest type found on the permit area. This community is rangeland dominated by big sagebrush (*Artemisia tridentata*). Some native graminoids, forbs and subshrubs occur in the understory and inner-space in the shrub mosaic. Typically, perennial grasses include western wheatgrass, green needlegrass, needleandthread, prairie sandreed (*Calamovilfa longifolia*), prairie junegrass, blue grama and threadleaf sedge. Introduced annual grasses are found throughout the sagebrush shrubland habitat type with varying contributions to cover. In limited areas, crested wheatgrass from various seedings has established itself in this habitat type.

Rough Breaks Mixed Shrubland

The rough breaks mixed shrub habitat is rather diverse in both topography and vegetation. It generally occurs on steep slopes and is sometimes associated with scoria and sandstone rock outcrops. These areas are covered with coarse rock fragments. Graminoid species in these areas include little bluestem (*Andropogon scoparius),* bluebunch wheatgrass and needleandthread. Shrub species include big sagebrush, skunkbush sumac

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(*Rhus trilobata*), rubber rabbitbrush (*Ericameria nauseosus*) and western snowberry (*Symphoricarpos occidentalis*). There are also some inclusions of Rocky Mountain juniper (*Juniperus scopulorum*) and the juniper woodland habitat is found within this rough breaks habitat type.

Reclamation

The reclamation habitat type consists primarily of lands reclaimed by the Big Horn Mine. This habitat is dominated by perennial grasses which include western wheatgrass, thickspike wheatgrass (*Elymus lanceolatus*), intermediate wheatgrass (*Thinopyrum intermedium*), crested wheatgrass, green needlegrass and smooth brome (*Bromus inermis*). Introduced annual grasses and forbs are also present in varying amounts depending on yearly climatic conditions. Patches of shrubland are located within this reclaimed community type with rubber rabbitbrush, fourwing saltbush (*Atriplex canescens*) and big sagebrush being the most common shrubs.

Juniper Woodland

The juniper woodland habitat type is dominated by Rocky Mountain juniper and big sagebrush. There are some inclusions of grassland within the understory of this community. Graminoid species include little bluestem, western wheatgrass, blue grama and bluebunch wheatgrass. The juniper woodlands are generally found on rather steep to gently sloping uplands on relatively poor soils within the rough breaks type.

Riparian Woodland

The riparian woodland habitat type is associated with creek and river channels, primarily Slater Creek within the Brook Mine permit area. Species found in this community include cottonwood (*Populus* sp.), green ash (*Fraxinus pensylvanica*), some peachleaf willow (*Salix amygdaloides*) and Greene's mountain ash (*Sorbus scopulina*). A variable understory of shrubs, grasses, grasslike species and forbs is present.

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Hayland

The hayland habitat type is found in small portions throughout the Brook Mine permit area. The main resource derived from this community is grass hay, alfalfa and small grain production for livestock use.

Disturbed Lands

The current unreclaimed disturbance on this area is attributed to an existing gravel mine, other past mine facilities, county roads, other roads and railroad.

Stockpond/Water

The stockpond/water habitat type consists primarily of stockponds constructed for livestock watering. These ponds support livestock production and wildlife habitat.

Habitat affinity for the various classes of wildlife were generally presented or discussed in each of the results sections for those species. In general, the most important habitat, or the habitat where the greatest diversity and abundance of species were observed, was the riparian woodland followed by the sagebrush shrubland, upland grassland, juniper woodland, rough breaks mixed shrubland and reclamation grassland. The various ponds present on the permit area provided sources of water for all classes of wildlife but were essential for aquatic species, waterfowl and shorebirds. Haylands also provide seasonal habitats for a variety of wildlife species.

D9-1.6 Conclusions and Impacts

Wildlife habitats designated by state or federal agencies as crucial or critical are not present within the permit area. Species currently listed as threatened or endangered have not been identified on the study area.

Big Game

Pronghorn and mule deer are the primary big game animals that may be displaced by this operation. White-tailed deer may be impacted to a lesser

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degree. Long term monitoring of big game animals at other coal mines in Wyoming has revealed these animals will habituate to mining activities and will readily feed on available forage adjacent to haul roads, mine pits and facilities. All of the disturbed area will be reclaimed for use as rangeland and wildlife habitat including planting several species of shrubs which are utilized by big game. The stockponds, reservoirs and wells that will be established following mining will be available for use by big game as well as livestock.

Road kills of pronghorn and deer may be expected to increase as a result of increased traffic associated with mine employees and venders. Brook Mine will also cooperate in any way possible with the Wyoming Game and Fish Department to reduce or eliminate the illegal or unwarranted killing of any animals at the mine location.

Hazards to deer and antelope movement will be reduced by using minimum amounts of fencing and using fences passable to antelope and deer except where these species need to be excluded such as hazardous sites or newly seeded areas. Fences where big game will be allowed to pass will be constructed according to WDEQ-LQD and/or WGFD recommendations.

Upland Game Birds and Waterbirds

Some upland game birds will be displaced as mining proceeds. Habitat for the mourning dove will be enhanced since they flourish on newly reclaimed areas. The ponds and reservoirs that will be established are also important habitats for mourning doves. Sage-grouse and sharp-tailed grouse are present on the study area so they will be impacted. However, sage-grouse leks and active sharp-tailed grouse strutting grounds are not known to be present near proposed mining activities. Big sagebrush, which is used by sage-grouse for cover, nesting and a major portion of their winter diet, is included in the revegetation seed mixtures. Premining topography will also be replaced and grassy draws established for brood rearing (see the Reclamation Plan).

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The permit area provides limited waterbird habitat. The temporary elimination of any stockponds during mining will preclude the use of those portions of the permit area for some migrating waterbirds. It will also temporarily displace the few waterbirds (e.g. mallard, gadwall, and killdeer) recorded nesting on the permit area. Waterbird habitat is abundant nearby along the Tongue River, Goose Creek and Pit 3 Reservoir. Waterbirds will also use the temporary mine sediment ponds. The postmining impoundments will provide habitat for waterbirds on the reclaimed landscape.

Predatory Birds and Mammals

Predator use of the permit area will decline as the prey base and their habitat is removed. As habitat of prey species (small mammals, birds, large insects) is reclaimed, prey species density will increase and predator densities will respond. Nesting and foraging raptors will also be affected by mining activities. Tree nest sites and rock cairns will be erected on the post mine landscape to enhance raptor nesting habitat. Boulder piles of various sizes will be distributed over the area to provide shelter and den sites for both mammalian predators and their various prey species. These boulder piles will be distributed in a non-systematic manner to give a more natural effect. The permanent stockponds and reservoirs will also provide habitat for predatory birds and mammals which frequent the area. Throughout the mining operation predators will use the area as a hunting ground in proportion to the availability of prey species. Two bald eagle nests and several golden eagle nests are known to occur within one mile of the permit boundary but they should be far enough away from mine activities to avoid major impacts.

Small Mammals and Birds

Small mammals and birds will be displaced as mining proceeds but will return as habitat is reclaimed. Since revegetated habitat will not be grazed by livestock for several years, it may support higher densities of birds and small mammals during these periods than the premining habitat. The

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reestablishment of small mammals and bird species should be relatively rapid for the following reasons:

1. The diversity of plant species being used in reclamation.
2. The thorough distribution and number of permanent water sources being established after mining.
3. The establishment of boulder piles for immediate use as shelter and dens.
4. The establishment of shrub patches and trees in reclamation.

Reptiles and Amphibians

Reptiles and amphibians are about the least mobile of all groups of wildlife species inhabiting the permit area. Many will be destroyed as topsoil is stripped prior to mining and if any reservoirs or stockponds will be removed. Proposed wildlife habitat restoration will also benefit these species and allow recolonization of reclaimed areas. Of particular importance to some reptiles will be the rock piles. The reclaimed waterbodies and riparian habitats will allow the reestablishment of other herptiles on the permit area.

Aquatic Habitats

Portions of Slater Creek and Earley Creek may be affected by the project. Neither of these drainages supports viable fisheries so impacts to the fisheries resource will be minimal. The characteristics of the portions of these channels disturbed will be replaced when these creeks are reclaimed. No disturbances will occur in Goose Creek or the Tongue River so impacts to fisheries in those streams will be minimal. Several ponds may be mined through, but these ponds will be replaced in the postmine landscape.

Threatened or Endangered Species

No wildlife or plant species currently listed by the USFWS as threatened or endangered are known to exist on the permit area or adjacent lands. The

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appropriate state and federal agencies will be contacted, and acceptable mitigation measures developed, if a listed species is identified on the area during future surveys.

Hunting Access

The Brook Mine may allow hunting on the area when it does not jeopardize the safety of ranching operations, sportsmen and/or mine personnel. Landowners also control access on portions of the study area. Currently a portion of the permit area is under the WGFD Private Land Public Wildlife Program (PLPW) which allows access to sportsman for hunting. This access may be limited during the mine operation to protect the safety of mine employees as well as sportsmen. Hunting that is allowed will be in compliance with Wyoming State Game Laws.

Monitoring and Mitigation

Wildlife protection measures are provided in Section MP.18 of the Mine Plan and an outline of general wildlife monitoring commitments is provided in Addendum MP-8 also of the Mine Plan volume. The Migratory Birds of Conservation Concern and Raptor Monitoring and Mitigation Plans are presented in Addendum MP-9 of the Mine Plan volume. These various plans proved the wildlife commitments and also commit to providing annual wildlife monitoring reports to the WDEQ-LQD. The Reclamation Plan includes wildlife habitat restoration practices and commitments.

D9-1.7 Persons Consulted

The collection and preparation of this wildlife information for the Brook Mine was completed by Jim Orpet and Russell Tait of Intermountain Resources, P.O. Box 1589, Laramie, Wyoming 82073, telephone 307-745-3803.

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D9-1.8 References

Baxter, G.T. and M.D. Stone. 1980. Amphibians and Reptiles of Wyoming. Wyoming Game and Fish Department, Cheyenne Wyoming. 137 pp.

Baxter, G.T. and M.D. Stone. 1995. Fishes of Wyoming. Wyoming Game and Fish Department, Cheyenne Wyoming. 290 pp.

Big Horn Coal Mine, Permit No. 213. WDEQ-LQD Permit to Mine and Annual Mine Reports housed in the LQD office in Sheridan, Wyoming.

Clark, T.W. and M.R. Stromberg. 1987. Mammals in Wyoming. University Press of Kansas, Lawrence Kansas. 314 pp.

D'Appolonia Consulting Engineers, Inc. 1977. Aquatic and Terrestrial Wildlife Surveys Along Tongue River. Englewood, Colorado.

USDI, Bureau of Land Management. 2007. Personal Communication and Unpublished Data. Buffalo Field Office. Buffalo, Wyoming.

USDI, Fish and Wildlife Service. 2004. Black-footed Ferret Block Clearance Letter dated February 2, 2004 from Ecological Services Office, Cheyenne, Wyoming.

USDI, Fish and Wildlife Service. 2013-2014. Threatened and Endangered Wildlife Species and Migratory Birds of Conservation Concern. IPAC (Information, Planning and Conservation System).

Water Resources Research Institute. 1976-1979. Aquatic Benthic Invertebrate Fauna and Fisheries Surveys of the Tongue River, Goose Creek, Ash Creek and Youngs Creek by Tom Wesche, Lora Johnson and James Gore of the University of Wyoming, Laramie, Wyoming.

Welch No.1 Coal Mine, Permit No. 497. WDEQ-LQD Permit to Mine and Annual Mine Reports housed in the LQD office in Sheridan, Wyoming.

Winget, R.N., and F.A. Mangum. 1979. Biotic Condition Index: Integrated Biological, Physical, and Chemical Stream Parameters for Management. U.S. Forest Service Intermountain Region. Provo, Utah.

WISDOM. 2014. Wyoming Interagency Spatial Database and Online Management System. University of Wyoming – Wyoming Geographic Science Center (WyGISC)

Wyoming Game and Fish Department-Fish Division. 2000. Wyoming Stream Fishery Classification. Wyoming Game and Fish Department. Cheyenne, Wyoming.

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Wyoming Game and Fish Department. 2012. Atlas of Birds, Mammals, Reptiles and Amphibians in Wyoming. Wyoming Game and Fish Department, Nongame Program, Lander Wyoming. 232 pp.

Wyoming Game and Fish Department. 2013 Annual Big Game Herd Unit Reports. Cheyenne, Wyoming

Wyoming Game and Fish Department. 2013-2014. Personal Communication and Unpublished Information, Sheridan Regional Office, Sheridan, Wyoming.

Wyoming Game and Fish Department. 2013. Greater Sage-grouse Lek Database. Cheyenne, Wyoming.

Youngs Creek Coal Mine, Permit No. 407. WDEQ-LQD Permit to Mine and Annual Mine Reports housed in the LQD office in Sheridan, Wyoming.

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DEQ 9-064

Table D9-1. Sage-grouse Survey Results for Leks Located Within Two Miles of the Brook Mine Permit Area

	C-Slater Creek			C-French Springs			C-Ash Creek		
Year/Date	M	F	U	M	F	U	M	F	U
2003									
4/11	12	9*	0	-	-	-	0	0	0
4/18	4	0	0	0	0	0	0	0	0
4/23	15	0	0	0	0	0	0	0	0
2004									
3/31	8	3	0	-	-	-	0	0	0
4/19	10	0	0	0	0	0	0	0	0
4/28	10	0	0	0	0	0	0	0	0
2005									
4/11	6	0	20	-	-	-	0	0	0
4/18	13	0	10	0	0	0	0	0	0
4/24	12	0	0	-	-	-	12	0	0
4/25	-	-	-	0	0	0	-	-	-
5/6	13	0	0	-	-	-	-	-	-
2006									
4/8	12	16	0	-	-	-	0	0	0
4/13	14	3	0	0	0	0	0	0	0
4/30	20	2	0	0	0	0	0	0	0
5/5	17	0	0	0	0	0	-	-	-
2007									
4/4	-	-	-	-	-	-	0	0	0
4/15	-	-	-	-	-	-	0	0	0
4/17	13	7	0	-	-	-	0	0	0
4/18	-	-	-	0	0	0	0	0	0
4/24	13	1	0	0	0	0	0	0	0
5/3	13	0	0	0	0	0	0	0	0
2008									
4/12	4	3	0	0	0	0	0	0	0
4/13	-	-	-	-	-	-	0	0	0
4/18	5	0	0	0	0	0	0	0	0
4/24	-	-	-	-	-	-	0	0	0
4/27	4	0	0	0	0	0	0	0	0
2009									
4/4	-	-	-	-	-	-	0	0	0
4/20	7	0	0	0	0	0	0	0	0
4/28	6	0	0	0	0	0	0	0	0
5/4	5	0	0	0	0	0	-	-	-

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DEQ 9-065

Table D9-1. Sage-grouse Survey Results for Leks Located Within Two Miles of the Brook Mine Permit Area (Continued)

	C-Slater Creek			C-French Springs			C-Ash Creek		
Year/Date	M	F	U	M	F	U	M	F	U
2010									
4/10	9	0	0	0	0	0	0	0	0
4/16	9	0	0	0	0	0	0	0	0
4/22	14	0	0	-	-	-	-	-	-
4/26	-	-	-	0	0	0	0	0	0
2011	No Surveys								
2012									
4/6	6	1	0	0	0	0	0	0	0
4/14	0	0	0	0	0	0	0	0	0
4/23	6	0	0	0	0	0	0	0	0
5/2	5	0	0	0	0	0	0	0	0
2013									
4/3	3	0	0	0	0	0	0	0	0
4/4	-	-	-	-	-	-	0	0	0
4/6	3	3	0	0	0	0	0	0	0
4/25	2	0	0	0	0	0	0	0	0
4/27	4	0	0	0	0	0	0	0	0
5/3	4	0	0	0	0	0	0	0	0
5/9	4	0	0	-	-	-	-	-	-
2014									
4/4	1	0	0	0	0	0	0	0	0
4/9	1	0	0	0	0	0	0	0	0
4/18	0	0	0	0	0	0	0	0	0
5/2	1	0	0	0	0	0	0	0	0

M = Male
F = Female
U = Unknown
- = Not surveyed on this data.

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Table D9-2. Active Sharp-tailed Grouse Leks Observed in the 2013-2014 Brook Mine Study Area

Year/Date	Pit 5 West Unclassified	Pit 5 East Unclassified
2013		
4/5	17	4
4/26	20	3
2014		
4/16	17	3
5/3	15	2

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Table D9-3. Raptor Nests Recorded on the Brook Mine Study Area in 2013 and 2014

Species / Nest Site	Location	Nest Substrate	Status	Activity 2013	Activity 2014
Bald Eagle (BE)					
BE1	T57N R85W NWNE Sec. 24	Cottonwood	Intact	A,?,?	A,1+,?
BE2	T57N R85W SENE Sec. 21	Cottonwood	Intact	A,1+,1	A,2,2
BE3	T57N R84W SWSE Sec. 14	Cottonwood	Intact	A,0,0	Goose
BE4	T57N R84W NWNW Sec. 13	Cottonwood	Intact	RT26a	A,2,2
	Total BE Nests = 4		Total	3,1+,1+	3,5+,4+
Golden Eagle (GE)					
GE1a	T57N R84W SESE Sec. 5	Pine	Intact	I	A,0,0
GE1b	T57N R84W NENE Sec. 8	Pine	Intact	I	I
GE1c*	T57N R84W NESE Sec. 9	Pine	Intact	A,0,0	I
GE2	T57N R84W NENE Sec. 27	Pine	Intact	A,2,2	A,2,2
GE3	T57N R85W NWNW Sec. 11	Cottonwood	Intact	A,2,2	A,2,1
GE4	T57N R85W NESW Sec. 15	Cottonwood	Intact	A,1,1	I

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DEQ 9-068

Table D9-3. Raptor Nests Recorded on the Brook Mine Study Area in 2013 and 2014 (Continued)

Species / Nest Site	Location	Nest Substrate	Status	Activity 2013	Activity 2014
Golden Eagle (GE) - Continued					
GE5	T57N R84W SESW Sec. 2	Pine	Intact	A,1,1	A,0,0
GE6	T57N R85W NENE Sec. 8	Cottonwood	Intact	A,0,0	I
	Total GE Nests = 8		Total	6,6,6	4,4,3
Red-tailed Hawk (RT)					
RT1*	T57N R84W SWNW Sec. 18	Cottonwood	Intact	A,0,0	A,3,3
RT2a*	T57N R85W NWNE Sec. 13	Cottonwood	Intact	--	A,3,3
RT2b*	T57N R84W NWNE Sec. 13	Cottonwood	Intact	A,2,2	I
RT3a*	T57N R84W NWSW Sec. 18	Cottonwood	Intact	I	I
RT3b*	T57N R84W NESW Sec. 18	Cottonwood	Intact	I	I
RT4	T57N R84W NWSW Sec. 17	Pine	Intact	I	I
RT5	T57N R84W SESW Sec. 15	Cottonwood	Intact	A,0,0	A,0,0
RT6*	T57N R84W NWNW Sec. 22	Mitigation Platform	Intact	I	I

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DEQ 9-069

Table D9-3. Raptor Nests Recorded on the Brook Mine Study Area in 2013 and 2014 (Continued)

Species / Nest Site	Location	Nest Substrate	Status	Activity 2013	Activity 2014
Red-tailed Hawk (RT) - Continued					
RT7	T57N R84W NENW Sec. 23	Cottonwood	Intact	I	A,0,0
RT8	T57N R85W SWSE Sec. 9	Cottonwood	Intact	A,0,0	I
RT9a	T57N R84W SESW Sec. 16	Cottonwood	Intact	I	I
RT9b	T57N R84W SESW Sec. 16	Cottonwood	No Longer Intact	I	DN
RT10	T57N R84W NENW Sec. 21	Cottonwood	Intact	A,2,2	A,2,2
RT11	T57N R84W NENW Sec. 21	Mitigation Platform	Intact	I	I
RT12	T57N R84W NENE Sec. 20	Cottonwood	Intact	I	GH1
RT13a	T57N R84W SWNW Sec. 20	Cottonwood	Intact	A,2,2	A,3,2
RT13b	T57N R84W SWNW Sec. 20	Cottonwood	Intact	Goose	I
RT14	T57N R84W NENE Sec. 19	Cottonwood	Intact	A,2,2	I
RT15a	T57N R84W SWNE Sec. 19	Cottonwood	Intact	A,?,?	Goose
RT15b	T57N R84W SWNE Sec. 19	Cottonwood	Intact	--	A,?,?

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DEQ 9-070

Table D9-3. Raptor Nests Recorded on the Brook Mine Study Area in 2013 and 2014 (Continued)

Species / Nest Site	Location	Nest Substrate	Status	Activity 2013	Activity 2014
Red-tailed Hawk (RT) - Continued					
RT16	T57N R85W NENW Sec. 23	Cottonwood	Intact	A,?,?	A,?,?
RT17a	T57N R85W SESW Sec. 15	Cottonwood	Intact	I	I
RT17b	T57N R85W SWSE Sec. 15	Cottonwood	Intact	--	A,?,?
RT18	T57N R85W SWSE Sec. 16	Cottonwood	Intact	I	A,0,0
RT19	T57N R85W NESW Sec. 3	Cottonwood	Intact	I	I
RT20	T57N R84W SWSW Sec. 3	Pine	Intact	--	A,3,3
RT21	T57N R84W NWSE Sec. 10	Pine	Intact	A,0,0	A,0,0
RT22	T57N R84W NENW Sec. 14	Pine	Intact	I	I
RT23	T57N R84W NESW Sec. 21	Pine	No Longer Intact	I	DN
RT24	T57N R84W NWSE Sec. 20	Cottonwood	Intact	I	I
RT25	T57N R84W SWSE Sec. 14	Cottonwood	Intact	BE3	Goose
RT26a	T57N R84W NWNW Sec. 13	Cottonwood	Intact	A,2,1	BE4

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DEQ 9-071

Table D9-3. Raptor Nests Recorded on the Brook Mine Study Area in 2013 and 2014 (Continued)

Species / Nest Site	Location	Nest Substrate	Status	Activity 2013	Activity 2014
Red-tailed Hawk (RT) - Continued					
RT26b	T57N R84W NESW Sec. 13	Cottonwood	Intact	--	A,3,3
RT27	T57N R84W NWSE Sec. 11	Cottonwood	Intact	I	I
RT28a	T57N R84W NESW Sec. 12	Cottonwood	Intact	A,2,2	I
RT28b	T57N R84W NWSW Sec. 12	Cottonwood	Intact	--	A,3,3
RT29	T57N R84W SWNE Sec. 11	Cottonwood	No Longer Intact	I	DN
RT30	T57N R84W NWSE Sec. 3	Pine	Intact	A,2,2	I
RT31	T58N R84W SWSE Sec. 32	Pine	No Longer Intact	A,0,0	DN
RT32	T58N R85W SESW Sec. 36	Cottonwood	Intact	A,0,0	A,0,0
RT33	T57N R84W SWSW Sec. 24	Cottonwood	Intact	GH3	A,0,0
	Total RT Nests = 41		Total	15,14+,13+	16,20+,19+
Great Horned Owl (GH)					
GH1	T57N R84W NENE Sec. 20	Cottonwood	Intact	I	A,3,3

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Table D9-3. Raptor Nests Recorded on the Brook Mine Study Area in 2013 and 2014 (Continued)

Species / Nest Site	Location	Nest Substrate	Status	Activity 2013	Activity 2014
Great Horned Owl (GH) - Continued					
GH2	T57N R84W NENW Sec. 21	Platform	Intact	I	I
GH3	T57N R84W SWSW Sec. 24	Cottonwood	Intact	A,1,1	A,0,0
GH4	T58N R85W SESW Sec. 36	Cottonwood	No Longer Intact	A,2,2	DN
GH5	T57N R85W SWNE Sec. 17	Cottonwood	Intact	--	A,2,2
	Total GH Nests = 5		Total	2,3,3	3,5,5
Osprey (OS)					
OS1	T57N R84W SESE Sec. 15	Platform	Intact	Goose	I
OS2	T57N R84W SESE Sec. 15	Platform	Intact	Goose	AT
OS3	T57N R84W NWNW Sec. 22	Platform	Intact	A,0,0	A,3,3
OS4	T57N R84W SWSE Sec. 15	Platform	Intact	I	I
OS5	T57N R84W NWNW Sec. 24	Light Pole	Intact	A,2,2	A,3,3
	Total OS Nests = 5		Total	2,2,2	3,6,6

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Table D9-3. Raptor Nests Recorded on the Brook Mine Study Area in 2013 and 2014 (Continued)

Species / Nest Site	Location	Nest Substrate	Status	Activity 2013	Activity 2014
Burrowing Owl (BO)					
BO1	T57N R84W NWNW Sec. 4	Prairie Dog Burrow	Intact	A,3+,3+	A,4+,4+
	Total BO Nests = 1		Total	1,3+,3+	1,4+,4+
	All Total Nests = 59 (Adjusted for nests used by more than one species)		**Total**	**29,29+,28+**	**30,44+,41+**

Abbreviation/Symbol Codes

X,#,# = Nest Status (A-active, I-inactive), number of young hatched, number of young fledged
Totals rows: #,#,# = total active nests, total young hatched, total young fledged

* = Denotes Nest Within Permit Area
-- = Nest Not Present
DN = Destroyed Naturally
AT = Nest Actively Tended

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Table D9-4. Passerine Bird Surveys Completed in 2013 and 2014 for the Brook Coal Mine

	2013 Surveys					
	UG		SS		RB	
Species	6/11	6/26	6/11	6/26	6/11	6/26
Western Meadowlark	11	10	9	7	7	2
Lark Sparrow	3	7	6	2	7	3
Grasshopper Sparrow	1	4				
Vesper Sparrow	1	2	1	2	2	
Cliff Swallow		1				
Brewer's Sparrow			9	6	1	
Lark Bunting			4	2		
Rufous-sided Towhee				1		3
Black-billed Magpie			2		5	5
Horned Lark	4					
Killdeer	1					
Mourning Dove	3					
McCown's Longspur	2					
Sage Thrasher			1			
American Robin	1				1	2
Golden Eagle					1	
American Kestrel					1	

	2014 Surveys					
	RW		PG		RC	
Species	5/28	6/13	5/28	6/13	5/28	6/13
Western Meadowlark	3	1	1	1	5	9
Lark Sparrow	2	2	1		7	3
Cliff Swallow						3
Rufous-sided Towhee	1	2				
Black-billed Magpie	2	4	2	2		
Killdeer			1	1	2	
American Robin	5	10		3	1	
American Kestrel	1					
Bullocks Oriole	3					1
Eastern Kingbird	5					
Western Wood Pewee	1					
Yellow Warbler	7	4				
Western Kingbird	2	3	2			
Starling	11	6	2	2	4	2

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Table D9-4. Passerine Bird Surveys Completed in 2013 and 2014 for the Brook Coal Mine (Continued)

	2014 Surveys					
	RW		PG		RC	
Species	5/28	6/13	5/28	6/13	5/28	6/13
Brown Headed Cowbird	5		1		1	
Common Flicker	3	2				1
Red-tailed Hawk	2	2		1		
Willow Flycatcher	1					
Orchard Oriole	3	2				
Say's Phoebe					1	
Ring-necked Pheasant					1	
Mallard					4	
Canada Goose					1	
House Wren		3				
Yellow-breasted Chat		2				
Gray Catbird		1				
Osprey						1
Great Blue Heron						1
Turkey Vulture						1

UG = Upland Grassland
SS = Sagebrush Shrubland
RB = Rough Breaks / Juniper
RW = Riparian Woodland
PG = Prairie Dog Town Grassland
RC = Reclaimed Lands

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Table D9-5. Passerine Species Observed on or within One Mile of the Original Mine Youngs Creek Mine Permit Area No. 407 during July, 1975

Species	Estimated Abundance	Principal Habitat Type Frequented
Eastern kingbird	Fairly common	Hayland
Say's phoebe	Fairly common	Big sagebrush shrubland
Olive-sided flycatcher	Uncommon	Pine and juniper woodland
Cliff swallow	Abundant	Big sagebrush shrubland
Black-billed magpie	Common	Riparian woodland
House wren	Abundant	Riparian woodland
Rock wren	Common	Big sagebrush shrubland
American robin	Common	Riparian woodland
Mountain bluebird	Common	Pine and juniper woodland
Starling	Fairly common	Riparian woodland
Red-eyed vireo	Uncommon	Riparian woodland
Common yellowthroat	Common	Riparian woodland
Western meadowlark	Abundant	Hayland
Red-winged blackbird	Fairly common	Riparian woodland
Brewer's blackbird	Fairly common	Riparian woodland
Bullocks oriole	Uncommon	Riparian woodland
Lazuli bunting	Common	Riparian woodland
American goldfinch	Common	Riparian woodland
Rufous-sided towhee	Fairly common	Pine and juniper woodland
Lark bunting	Abundant	Big sagebrush shrubland
Vesper sparrow	Common	Big sagebrush shrubland
Lark sparrow	Common	Big sagebrush shrubland
Brewer's sparrow	Abundant	Big sagebrush shrubland

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Table D9-6. Results of Breeding Bird Strip Censuses on the Original Youngs Creek Permit Area No. 407 (June, 1980)[a, b]

	Riparian Woodland [c]	Bottomland Grassland	Pine and Juniper Woodland	Big Sagebrush Shrubland	Rough Breaks Mixed Shrubland	Reclamation
ORDER PASSERIFORMES						
Eastern kingbird	1(.04)		1(.04)			
Traill's flycatcher	1(.04)					
Barn swallow	1(.04)		1(.01)			
Cliff swallow	11(.44)	17(.68)	11(.45)	4(.16)	18(.73)	10(.40)
Black-billed magpie		3(.12)	1(.04)			
House wren	1(.04)					
Rock wren		1(.04)			7(.28)	
American robin	4(.16)	1(.04)	2(.08)	1(.01)	1(.04)	
Mountain bluebird					1(.04)	
Starling	2(.08)			1(.01)		
Yellow warbler	3(.12)					
Common yellowthroat	1(.04)					
Western meadowlark	13(.52)	6(.24)	4(.16)	7(.28)	5(.20)	4(.16)
Red-winged blackbird	15(.60)					1(.01)
Brewer's blackbird	9(.36)		1(.01)		1(.04)	
Bullock's oriole	1(.04)					
American goldfinch	1(.04)					
Rufous-sided towhee		3(.12)	2(.08)			
Vesper sparrow	4(.16)	3(.12)	2(.08)	4(.16)	1(.04)	
Lark sparrow	4(.16)		10(.40)	5(.20)		
Chipping sparrow				1(.01)		
Brewer's sparrow		2(.08)	1(.04)	4(.16)	1(.04)	
ORDER ANSERIFORMES						
Mallard	1(.04)					
ORDER FALCONIFORMES						
Turkey vulture			1(.01)			
Red-tailed hawk			1(.01)			
American kestrel	1(.04)	3(.12)	2(.08)	1(.01)		3(.12)
ORDER GALLIFORMES						
Sage-grouse			1(.04)			
Ring-necked pheasant	1(.04)					
ORDER GRUIFORMES						
Sora rail	1(.04)					
ORDER CHARADRIIFORMES						
Upland plover			1(.01)	1(.04)		
Killdeer	2(.08)		1(.04)			1(.04)

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DEQ 9-078

Table D9-6. Results of Breeding Bird Strip (Continued)

	Riparian Woodland[c]	Bottomland Grassland	Pine and Juniper Woodland	Big Sagebrush Shrubland	Rough Breaks Mixed Shrubland	Reclamation
ORDER COLUMBIFORMES						
Mourning dove	3(.12)		1(.04)	1(.04)		3(.12)
ORDER CUCULIFORMES						
Black-billed cuckoo	1(.04)					
ORDER STRIGIFORMES						
Great horned owl		3(.12)	1(.01)			
ORDER CAPRIMULGIFORMES						
Common nighthawk				1(.01)		
ORDER PICIFORMES						
Common flicker		3(.12)	1(.04)	1(.01)		
Number of Species Observed	23	11	20	13	8	6
No. of Birds Observed per 1000 meter transect	81	44	42	28	35	21

a Represents average number per day per 1000-meter transect rounded to nearest whole number

b Number in parenthesis indicated estimated density per acre

c Rerouted Youngs Creek and woodlands associated with the original streambed.

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DEQ 9-079

Table D9-7. Results of Winter Bird Surveys on the Original Youngs Creek Mine Permit Area No. 407 (February, 1981)[a]

	HABITAT TYPE					
Species	Riparian Woodland[b]	Bottomland Grassland	Pine and Juniper Woodland	Big Sagebrush Shrubland	Rough Breaks Mixed Shrubland	Reclamation
PASSERIFORMES						
Black-billed magpie	1		1			
Red crossbill	2					
Black-capped chickadee	5	1	7			
Horned lark				3		
Gray jay	1					
Pine grosbeak	2		1			
Tree sparrow	8					
American robin		1	2			
Gray-crowned rosy finch			2		37	
Townsend's solitaire		1	1			
White-breasted nuthatch			1			
Red-breasted nuthatch			2			
GALLIFORMES						
Sage-grouse				2 roosts		
Wild turkey	Tracks					
STIGIFORMES						
Great horned owl	1	1	1			
PICIFORMES						
Hairy woodpecker	1					
Downy woodpecker	1					
Number of Species	10	5	9	2	1	0

a - Figures represent the number of birds observed per 1000-meters of transect.

b - Rerouted Little Youngs Creek, woodlands associated with original streambed, and a portion of undisturbed Little Youngs Creek above the permit area.

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DEQ 9-080

Table D9-8. Estimated Densities per Hectare of Species Recorded from All Riparian Woodland Point-Transects on the Big Horn Coal Mine Permit No. 213 Study Area in 1979

Species	# Individual Birds Recorded				# Stations Observed at				# Birds/ha			
	Jun	Jul	Aug	Sep	Jun	Jul	Aug	Sep	Jun	Jul	Aug	Sep
Mallard	2	1	1	2	1	1	1	2	0.06	0.03	0.03	0.06
Killdeer	13	5	5	4	11	5	3	3	0.41	0.16	0.16	0.13
Spotted Sandpiper	4	1	1		4	1	1		0.13	0.03	0.03	
Mourning Dove	8	7	11		6	5	8		0.25	0.22	0.35	
Belted Kingfisher	1		3		1		3		0.03		0.1	
Common Flicker	5	8	10	2	5	6	7	1	0.16	0.25	0.32	0.06
Downy Woodpecker		1				1				0.03		
Eastern Kingbird	22	20	17		15	11	7		0.7	0.64	0.54	
Western Kingbird	1	1	17		1	1	2		0.03	0.03	0.13	
Western Wood Pewee	4		3		2		3		0.13		0.1	
Black-billed Magpie			7	1			5	1			0.22	0.03
Black-capped Chickadee	1		4	6	1		2	3	0.03		0.13	0.19
House Wren	3	7	6		3	6	3		0.1	0.22	0.19	
Gray Catbird	7	2	5		5	2	5		0.22	0.06	0.16	
American Robin	29	10	24	2	14	7	10	2	0.92	0.32	0.76	0.06
Cedar Waxwing			2				1				0.06	
Yellow Warbler	22	18	8	1	12	11	5	1	0.7	0.57	0.25	0.03
Common Yellowthroat	8	3			5	2			0.25	0.1		
Yellow-breasted Chat		5				4				0.16		
American Redstart	2	1	4		2	1	3		0.06	0.03	0.13	
Western Meadowlark	1	1		2	1	1		1	0.03	0.03		0.06
Bullocks Oriole	4				4				0.13			
Lazuli Bunting	5	2			4	2			0.16	0.06		
American Goldfinch	7	4	3		5	4	3		0.22	0.13	0.1	
Rufous-sided Towhee			1				1				0.03	
Lark Sparrow			1				1				0.03	
Chipping Sparrow				5				1				0.16
White-crowned Sparrow				9				2				0.29
Song Sparrow	3	2		1	2	1		1	0.1	0.06		0.03
Unidentified Passerine	23	35	41	11	14	14	27	8	0.73	1.11	1.31	0.35

ha = hectare

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DEQ 9-081

Table D9-9. Passerine Bird Breeding Densities (#/ha) in Habitats Present on the Big Horn Coal Mine Permit No. 213 Area. Habitats were Sampled in 1980, Except Where Otherwise Noted

	Habitat Types							
Species	Big Sagebrush Shrubland	Big Sagebrush Shrubland (1981)	Big Sagebrush Shrubland	Pine & Juniper Woodland	Rough Breaks Mixed Shrubland	Rough Breaks Mixed Shrubland Rim-rock	Rough Breaks Mixed Shrubland Rim-rock (1981)	Upland Grassland
Common Flicker	*	0.13	*	*	*	*	*	*
Says Phoebe	*	0.03	*	*	*	*	*	*
Black-billed Magpie	*	*	*	0.60	*	*	*	*
Black-capped Chickadee	*	*	*	0.69	*	*	*	*
Rock Wren	*	*	*	*	*	*	1.19	*
American Robin	*	*	*	0.34	*	*	*	*
Yellow Warbler	*	*	*	0.09	*	*	*	*
Yellow-rumped Warbler	*	*	*	0.17	*	*	*	*
Western Meadowlark	*	0.37	0.4	0.09	0.3	0.22	0.07	1.07
Common Grackle	*	0.13	*	*	*	*	*	*
Bullocks Oriole	*	*	*	0.09	*	*	*	*
Rufous-sided Towhee	*	*	*	0.34	0.6	*	*	*
Vesper Sparrow	0.13	0.43	*	0.09	*	1.78	0.22	0.13
Lark Sparrow	0.4	0.03	0.53	1.46	1.49	*	0.67	*
Chipping Sparrow	0.13	*	0.13	1.29	*	*	*	*
Brewer's Sparrow	0.93	0.4	*	*	*	*	*	*

* - Species not recorded in this habitat type.
ha - Hectare

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DEQ 9-082

Table D9-10. Breeding Bird Density Data Collected on the Welch No. 1 Mine Permit No. 497 Property and Vicinity

	Relative Density - #/ha					
	Riparian		Big Sagebrush Shrubland		Pine and Juniper	
Species	**Welch**	**Vicinity**	**Welch**	**Vicinity**	**Welch**	**Vicinity**
Yellow warbler	2.22	3.28				
American robin	1.06	2.08		0.14		
House wren	0.97	0.22				
Least flycatcher	0.87					
Western wood pewee	0.68	0.87				
Eastern kingbird	0.58	0.66	0.12			
Bullocks oriole	0.39	0.43				
Common flicker	0.29	1.09	0.12			
Mourning dove	0.29	0.87				
Western meadowlark	0.29	1.31	0.49	0.82	0.16	
Barn swallow	0.29					
Black-capped chickadee	0.58	0.44			0.33	
Brewer's blackbird	0.29	2.62				
Brown-headed cowbird	0.29	0.66				
American redstart	0.29	0.22				
Yellow-breasted chat	0.20					
Lark sparrow	0.29	1.75	0.36	0.14	0.33	
Rufous-sided towhee	0.29	0.22			0.66	
Killdeer	0.19	0.22		0.14		
American goldfinch	0.19	0.87				
Black-billed cuckoo	0.19					
Least flycatcher	0.19	0.22	0.12		0.16	
Common grackle	0.19	0.44				
Great horned owl	0.10					
White-breasted nuthatch	0.10					
Red-eyed vireo	0.10					
Gray catbird	0.10	0.43				
Lazuli bunting	0.10					
Rose-breasted grosbeak	0.10					
Common yellowthroat	0.10	0.22				
Downy woodpecker	0.10	0.22				
Brewer's sparrow	0.33		0.49	0.55	0.33	
Chipping sparrow	1.48				1.48	
Yellow-rumped warbler	0.16				0.16	
Rock Wren	0.16		0.27		0.16	
Cliff swallow	0.12	large feeding group	0.12			
Red-winged blackbird		0.22				
Starling		0.22				
Yellow-billed cuckoo		0.22				
Vesper sparrow		0.22	0.24	0.27		
Brown thrasher		0.44				

ha - hectare

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DEQ 9-083

Table D9-11. Small Mammal Capture Results for the Original Youngs Creek Mine Permit Area No. 407 (1975, 1977)

	AVERAGE NUMBER OF CAPTURES PER DAY						
	July 1-3, 1975				July 5-8, 1977		
Species	Xeric Sagebrush	Mesic Sagebrush	Riparian Woodland	Ponderosa Pine	Sagebrush Grassland	Ponderosa Pine	Wet Meadow
Deer mouse	11.3	9.7	6.3	1.5	1.7	13	2.0
Least chipmunk	0.7	-	-	1.0	-	-	0.3
Thirteen-lined ground squirrel	0.3	-	-	-	0.3	-	-
Meadow jumping mouse	-	-	0.3	-	-	-	-
Total Number of Species Captured	3	1	2	2	2	1	2

- indicates that species was not captured in the habitat type.

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DEQ 9-084

Table D9-12. Small Mammal Capture Results for the Original Youngs Creek Mine Permit Area No. 407 (August/September, 1980)[a]

	Habitat Type						
Species	Riparian Woodland[b]	Bottomland Grassland	Pine and Juniper Woodland	Big Sagebrush Shrubland	Rough Breaks Mixed Shrubland	Reclamation	Number of Habitat Types in which Captured
Deer mouse	38	18	19	18	30	21	6
House mouse	2						1
Masked shrew	1	2					2
Grasshopper mouse				1			1
Bushy-tailed woodrat			1				1
Total Number of Species Captured	3	2	2	2	1	1	
Total Average Number of Individuals Captured	41	20	20	19	30	21	

a Riparian woodland (225 trap-nights and days), Bottomland Grassland (75), Rough Breaks Mixed Shrubland (75), and Reclamation (225) were all adjusted to 150 trap-nights and days for comparison. All trap lines were of equal length and consisted of 25 traps. These lines were run for three consecutive 24-hour periods. Number of lines per habitat was based on the extent and location of habitats.

b Rerouted Little Youngs Creek and woodland areas associated with the original streambed.

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DEQ 9-085

Table D9-13. Abundance and Community Diversity Indices by Habitat for the Big Horn Coal Mine Permit No. 213 Small Mammal Trappings

Habitat	UG		BSS			RW	PJ		Reclaimed							
Site #	W1	P4-1	W2	P4-2	80-2	BH1	BH3	80-1	BH4			80-3	BH2			
Month-Year Trapped	Jun 76	Oct 78	Jun 76	Oct 78	Sep 80	Jun 76	Jun 76	Sep 80	Jun 76	Jun 77	Sep 77	Sep 80	Jun 76	Jun 77	Sep 77	Sep 80
Number Genera Captured	4	2	2	1	2	1	2	2	1	1	1	2	1	3	2	3
Captures/100 TN																
Peromyscus sp.	1.7	10.0	3.7	2.7	11.3	4.0	4.0	14.7	4.0		1.0	4.7	2.0	0.4		6.7
Microtus sp.	1.7									0.5		2.0		4.8	5.6	1.3
House mouse	0.3															
Thirteen-lined ground squirrel	0.3		2.0													
Least chipmunk							1.3	7.3								
Harvest Mouse		0.7			2.0									0.8	0.8	
Olive-backed pocket mouse																0.7
TOTAL	**4.0**	**10.7**	**3.7**	**2.7**	**13.3**	**4.0**	**5.3**	**22.0**	**4.0**	**0.5**	**1.0**	**6.7**	**2.0**	**6.0**	**6.4**	**8.7**
Diversity																
E(H')[1]	1.02	0.20	0.62		0.40		0.50	0.62				0.56		0.56	0.35	0.61
J[2]	0.73	0.29	0.89		0.57		0.72	0.90				0.81		0.51	0.50	0.56

UG - Upland Grassland
BSS - Big Sagebrush Shrubland
RW - Riparian Woodland
PJ - Pine and Juniper Woodland

1 - Shannon-Weaver Diversity
2 - Evenness

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DEQ 9-086

Table D9-14. Small Mammal Trap Lines on the Welch No.1 Mine Permit No. 497 Study Area*

Species	Number Captured 1979	1980	Habitat
Deer mouse	6	21	Big Sagebrush Shrubland
	31	3**	Riparian Woodland/Hayland
	2	3	Pine and Juniper Woodland
	4	3	Upland Grassland
White-footed mouse	2	2**	Riparian Woodland/Hayland
	1	0	Pine and Juniper Woodland
Long-tailed vole	1	0	Riparian Woodland
Bushy-tailed wood rat	0	1	Pine and Juniper Woodland

* - Trapping efforts were carried out during the month of October. No mammals were trapped in the rock outcrop trapping line.

** - The 1980 riparian woodland trap lines were raided each night by raccoon and/or mink.

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DEQ 9-087

Table D9-15. USFWS Migratory Birds of Conservation Concern in Sheridan County, Wyoming, Updated August of 2014

Species	Regional Seasonal Status	Recorded on Area or in Vicinity	Expected Occurrence On Study Area
American Bittern	Migrant	No	Uncommon
Bald Eagle	Winter	Yes	Common/Winter
Black Rosy-Finch	Breeder/ Winter	No	Uncommon
Brewer's Sparrow	Breeder	Yes	Common
Burrowing Owl	Breeder	Yes	Uncommon
Calliope Hummingbird	Breeder	Yes	Occasional
Cassins Finch	Winter	No	Occasional
Ferruginous Hawk	Breeder	Yes	Uncommon
Golden Eagle	Breeder	Yes	Common
Grasshopper Sparrow	Breeder	Yes	Occasional
Greater Sage-grouse	Breeder	Yes	Uncommon
Mountain Plover	Breeder	No	Rare
Pinyon Jay	Breeder	Yes	Uncommon
Prairie Falcon	Breeder	Yes	Occasional
Williamson's Sapsucker	Breeder	No	Uncommon
Willow Flycatcher	Breeder	Yes	Occasional

*Based on USFWS Wyoming Ecological Services Field Office, Cheyenne, Wyoming and IPAC (Information, Planning and Conservation System), August, 2014. Scientific names are provided in Addendum D9-1.

Regional Seasonal Status and expected occurrence compiled from Wyoming Game and Fish Department Atlas of Birds, Mammals, Reptiles and Amphibians in Wyoming, 2012 and Subsequent Revisions

Specific records of observations on area or in the vicinity are from wildlife baseline and monitoring surveys completed for the Brook Mine in 2013-2014, the Youngs Creek Coal Mine Permit No. 407, the Big Horn Coal Mine Permit No. 213 and the Welch No. 1 Coal Mine Permit No. 497.

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DEQ 9-088

Table D9-16. Results of Fish Sampling Completed by the Big Horn Coal Mine on the Tongue River and Goose Creek, 1977 to 1979

Species	Tongue River	Goose Creek
Mountain whitefish	*	
Rainbow trout	*	
Brown trout	*	*
Northern pike	*	
Common carp	*	*
Golden shiner	*	
Flathead chub	*	*
Longnose dace	*	*
Sand shiner	*	
Plains minnow		
Fathead minnow	*	*
Shorthead redhorse	*	*
White sucker	*	*
Longnose sucker	*	*
Mountain sucker	*	*
Black bullhead	*	*
Stonecat	*	*
Smallmouth bass	*	*
Green sunfish	*	*
Rock bass	*	*
White crappie	*	
Sauger	*	
Yellow perch	*	

* - Indicates species was recorded in that waterbody.

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DEQ 9-089

Table D9-17. Summary of Quantitative Data for the Benthic Community Sampling along the Tongue River between Acme and Montana State Border, 1976[1]

	Station [2]					
	Tongue River No.2		Tongue River No. 3		Tongue River No. 4	
Parameter	**Jul**	**Oct**	**Jul**	**Oct**	**Jul**	**Oct**
Mean Organisms sampled (n/o.1m^2)	1441.5	767.6	1995.4	1686.5	824.3	463.6
Total taxa	27	33	30	25	26	33
Biomass (mg/0.1m^2)	237.7	411.7	300.2	319.1	111.2	162.9
Mean Diversity (D_{IB})[3]	2.359	2.232	2.380	2.657	2.969	2.755
Mean Diversity (D_{IN})[4]	2.014	2.167	2.903	2.218	2.908	2.490
Equitability (e)	0.365	0.403	0.583	0.821	0.719	0.533

[1] – From WRRI, 1977

[2] – Station Locations: Tongue River No. 2 - Below Brown and Williams Pit, Big Horn Mine Section 23, T57N, R84W.
Tongue River No. 3 - 300 meters upstream of Highway 338 Bridge, Section 1, T58N, R83W.
Tongue River No. 4 - River at Section 31, T58N, R83W.

[3] – Mean diversity based on biomass from sample replicates.

[4] – Mean diversity based on numbers from sample replicates.

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DEQ 9-090

Table D9-18. Results of Fisheries Evaluations Completed for the Welch No.1 Mine Permit No. 497 on the Tongue River

Species	Tongue River Acme to Montana (1)	Tongue River Vicinity of Highway 338 (2)	Tongue River Reservoir, Montana (3)
Mountain whitefish	*		
Rainbow trout			*
Brown trout	*		*
Northern pike			*
Common carp	*	*	*
Goldfish			*
Golden shiner	*		*
Creek chub	*		
Lake chub	*	*	
Flathead chub	*	*	*
Longnose dace	*	*	
Sand shiner	*		
Plains minnow	*		
Fathead minnow	*		
Shorthead redhorse	*	*	*
White sucker	*	*	*
Longnose sucker	*		*
Mountain sucker	*		
Black bullhead	*		
Channel catfish	*		
Stonecat	*		
Yellow bullhead			*
Pumpkinseed			*
Smallmouth bass	*	*	*
Largemouth bass		*	*
Green sunfish	*		*
Rock bass	*		*
White crappie	*	*	*
Black crappie			*
Bluegill		*	
Sauger	*		*
Walleye			*
Yellow perch	*	*	*

* - Indicates species was recorded in that waterbody.
1) – Mueller, 1977
2) – D'Appolonia Consulting Engineers, 1977
3) – Penkel, 1977

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Table D9-19. Wildlife Habitat Type Acreages for the Brook Mine Permit Area, 2014

Habitat Type	Acres	Percent of Area
Upland Grassland	2158.6	47.5
Sagebrush Shrubland	965.6	21.2
Rough Breaks Mixed Shrubland	576.0	12.7
Reclamation	596.7	13.1
Juniper Woodland	67.7	1.5
Riparian Woodland	57.2	1.3
Hayland	4.5	<0.1
Stockpond/Water	12.8	0.3
Disturbed Lands	109.7	2.4
TOTAL	**4548.8**	**100.0**

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DEQ 9-092

ATTACHMENT D9-1-A

WILDLIFE SPECIES LIST

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DEQ 9-093

Attachment D9-1-A. **WILDLIFE SPECIES LIST**

This section provides the entire list of wildlife species having the potential to occur on or near the mine permit area and those species observed in the area based on site specific surveys conducted for the Brook Coal Mine in 2013 and surveys completed for the adjacent Big Horn Coal Mine and the nearby Welch No. 1 Coal Mine and the Youngs Creek Coal Mine. Species that have been observed within the study area are identified on the list with an asterisk. In all, a total of 251 individual wildlife species have been recorded within the Brook Coal Mine permit area or nearby lands. This list of 251 species observed on the study area includes 42 mammals, 162 birds, 16 reptiles or amphibians and 31 fish.

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DEQ 9-094

WILDLIFE SPECIES LIST FOR THE BROOK COAL MINE STUDY AREA

OBSERVED AND POTENTIAL MAMMALIAN INHABITANTS

Scientific Nomenclature[1]	Common Name	Observed
INSECTIVORA		
Soricidae		
Sorex cinereus	Masked shrew	*
Sorex merriami	Merriam's shrew	
Sorex monticolus	Dusky shrew	
Sorex palustris	Water shrew	*
Sorex vagrans	Vagrant shrew	
CHIROPTERA		
Vespertilionidae		
Myotis ciliolabrum	Western small-footed myotis	
Myotis evotis	Long-eared myotis	
Myotis lucifugus	Little brown myotis	*
Myotis thysanodes	Fringed myotis	
Myotis volans	Long-legged myotis	
Lasiurus cinereus	Hoary bat	
Lasionycteris noctivagans	Silver-haired bat	
Eptesicus fuscus	Big brown bat	
Plecotus townsendii	Townsend's big-eared bat	
Antrozous pallidus	Pallid bat	
LAGOMORPHA		
Leporidae		
Sylvilagus audubonii	Desert cottontail	*
Sylvilagus nuttallii	Mountain (Nuttall's) cottontail	*
Lepus townsendii	White-tailed jack rabbit	*
RODENTIA		
Sciuridae		
Neotamias minimum	Least chipmunk	*
Marmota flaviventris	Yellow-bellied marmot	*
Spermophilus tridecemlineatus	Thirteen-lined ground squirrel	*
Cynomys ludoviciana	Black-tailed prairie dog	*
Sciurus niger	Eastern fox squirrel	
Tamiasciurus hudsonicus	Red squirrel	*
Geomyidae		
Thomomys talpoides	Northern pocket gopher	*
Heteromyidae		
Perognathus fasciatus	Olive-backed pocket mouse	
Dipodomys ordii	Ord's kangaroo rat	*
Castoridae		
Castor canadensis	Beaver	*
Cricetidae		
Reithrodontomys megalotis	Western harvest mouse	*

[1] Nomenclature from WGFD 2012.

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DEQ 9-095

WILDLIFE SPECIES LIST (cont.)

OBSERVED AND POTENTIAL MAMMALIAN INHABITANTS (cont.)		
Scientific Nomenclature[1]	**Common Name**	**Observed**
RODENTIA (cont.)		
Peromyscus leucopus	White-footed mouse	
Peromyscus maniculatus	Deer mouse	*
Onychomys leucogaster	Northern grasshopper mouse	*
Neotoma cinerea	Bushy-tailed woodrat	*
Clethrionomys gapperi	Southern red-backed vole	
Microtus longicaudus	Long-tailed vole	*
Microtus montanus	Montane vole	
Microtus ochrogaster	Prairie vole	
Microtus pennsylvanicus	Meadow vole	*
Lemmiscus curtatus	Sagebrush vole	*
Ondatra zibethicus	Muskrat	*
Muridae		
Rattus norvegicus	Norway rat	
Mus musculus	House mouse	*
Dipodidae		
Zapus hudsonius	Meadow jumping mouse	*
Zapus princeps	Western jumping mouse	*
Erethizontidae		
Erethizon dorsatum	Porcupine	*
CARNIVORA		
Canidae		
Canis latrans	Coyote	*
Canis lupus	Gray wolf	
Vulpes vulpes	Red fox	*
Ursidae		
Ursus americanaus	Black bear	*
Procyonidae		
Procyon lotor	Raccoon	*
Mustelidae		
Mustela erminea	Short-tailed weasel	
Mustela frenata	Long-tailed weasel	*
Mustela nigripes	Black-footed ferret	
Mustela nivalis	Least weasel	
Mustela vision	Mink	*
Taxidea taxus	Badger	*
Mephitis mephitis	Stripped skunk	*
Lutra canadensis	River otter	
Felidae		
Puma concolor	Mountain lion	*

[1] Nomenclature from WGFD 2012.

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DEQ 9-096

WILDLIFE SPECIES LIST (cont.)

OBSERVED AND POTENTIAL MAMMALIAN INHABITANTS (cont.)		
Scientific Nomenclature[1]	**Common Name**	**Observed**
CARNIVORA (cont.)		
Lynx rufus	Bobcat	*
ARTIODACTYLA		
Cervidae		
Cervus elaphus	Elk	*
Odocoileus hemionus	Mule deer	*
Odocoileus virginianus	White-tailed deer	*
Alces alces	Moose	*
Antilocapridae		
Antilocapra americana	Pronghorn	*

OBSERVED AND POTENTIAL BIRD INHABITANTS		
ANATIDAE		
Chen caerulescens	Snow Goose	
Branta canadensis	Canada goose	*
Aix sponsa	Wood duck	*
Anas strepera	Gadwall	*
Anas americana	American widgeon	*
Anas platyrhynchos	Mallard	*
Anas discors	Blue-winged teal	*
Anas cyanoptera	Cinnamon teal	*
Anas clypeata	Northern shoveler	*
Anas acuta	Northern pintail	*
Anas crecca	Green-winged teal	*
Aythya valisineria	Canvasback	*
Aythya americana	Redhead	*
Aythya collaris	Ring-necked duck	
Aytha marila	Greater scaup	
Aythya affinis	Lesser scaup	*
Bucephala albeola	Bufflehead	*
Bucephala clangula	Common goldeneye	*
Bucephala islandica	Barrow's goldeneye	
Lophodytes cucullatus	Hooded merganzer	*
Mergus merganser	Common merganser	*
Mergus serrator	Red-breasted merganzer	*
Oxyura jamaicensis	Ruddy duck	*
PHASIANIDAE		
Alectoris chukar	Chukar	*
Perdix perdix	Gray partridge	*

[1] Nomenclature from WGFD 2012.

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DEQ 9-097

WILDLIFE SPECIES LIST (cont.)

OBSERVED AND POTENTIAL BIRD INHABITANTS (cont.)		
Scientific Nomenclature[1]	**Common Name**	**Observed**
PHASIANIDAE (cont.)		
Phasianus colchicus	Ring-necked pheasant	*
Centrocercus urophasianus	Greater sage grouse	*
Tympanuchus phasianellus	Sharp-tailed grouse	*
Meleagris gallopava	Wild turkey	*
PODICIPEDIDAE		
Podilymbus podicepts	Pied-billed grebe	*
Podiceps auritus	Horned grebe	*
Podiceps nigricollis	Eared grebe	*
Aechmophorus occidentalis	Western grebe	*
PELECONIDAE		
Pelecanus erythrorynchos	American white pelican	*
PHALACROCORACIDAE		
Phalacrocorax auritus	Double-crested cormorant	*
ARDEIDAE		
Botaurus lentiginosus	American bittern	
Ardea herodius	Great blue heron	*
Egretta thula	Snowy egret	
Nycticorax nycticorax	Black-crowned night-heron	
THRESKIORNITHIDAE		
Plegadis chihi	White-faced ibis	
CATHARTIDAE		
Cathartes aura	Turkey vulture	*
PANDIONIDAE		
Pandion haliaetus	Osprey	*
ACCIPITRIDAE		
Haliaeetus leucocephalus	Bald eagle	*
Circus cyaneus	Northern harrier	*
Accipiter striatus	Sharp-shinned hawk	*
Accipiter cooperii	Cooper's hawk	*
Accipiter gentilis	Northern goshawk	*
Buteo swainsoni	Swainson's hawk	*
Buteo jamaicensis	Red-tailed hawk	*
Buteo regalis	Ferruginous hawk	*
Buteo lagopus	Rough-legged hawk	*

[1] Nomenclature from WGFD 2012.

TFN 6 2/025
RECD NOV 14, 2014

DEQ 9-098

WILDLIFE SPECIES LIST (cont.)

OBSERVED AND POTENTIAL BIRD INHABITANTS (cont.)		
Scientific Nomenclature[1]	**Common Name**	**Observed**
ACCIPITRIDAE (cont.)		
Aquila chyrsaetos	Golden eagle	*
FALCONIDAE		
Falco sparverius	American kestrel	*
Falco columbarius	Merlin	
Falco rusticolus	Gyrfalcon	*
Falco peregrinus	Peregrine falcon	
Falco mexicanus	Prairie falcon	*
RALLIDAE		
Rallus limicola	Virginia rail	*
Porzana carolina	Sora	*
Fulica americana	American coot	*
GRUIDAE		
Grus canadensis	Sandhill crane	*
CHARADRIIDAE		
Pluvialis squatarola	Black-billed plover	
Pluvialis dominica	American golden-plover	
Charadrius semipalmatus	Semipalmated plover	
Charadrius vociferous	Killdeer	*
Charadrius montana	Mountain plover	
RECURVIROSTRIDAE		
Himantopus mexicanus	Black-necked stilt	
Recurvirostra americana	American Avocet	*
SCOLOPACIDAE		
Tringa melanoleucus	Greater yellowlegs	
Tringa flavipes	Lesser yellowlegs	*
Tringa solitaria	Solitary sandpiper	*
Tringa semipalmatas	Willet	
Actitis maculata	Spotted sandpiper	*
Bartramia longicauda	Upland sandpiper	*
Numenius americanus	Long-billed curlew	*
Limosa fedoa	Marbled godwit	
Calidris alba	Sanderling	
Calidris pusilla	Semipalmated sandpiper	
Calidris mauri	Western sandpiper	

[1] Nomenclature from WGFD 2012.

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RECD NOV 14, 2014

DEQ 9-099

WILDLIFE SPECIES LIST (cont.)

OBSERVED AND POTENTIAL BIRD INHABITANTS (cont.)		
Scientific Nomenclature[1]	**Common Name**	**Observed**
SCOLOPACIDAE (cont.)		
Calidris minutilla	Least sandpiper	*
Calidris bairdii	Baird's sandpiper	
Calidris melanotos	Pectoral sandpiper	
Calidris himanotopus	Stilt sandpiper	
Limnodromus scolopaceus	Long-billed dowitcher	*
Gallinago delicata	Wilson's snipe	*
Leucophaeus pipixcan	Franklin's gull	
PHALAROPODIDAE		
Phalaropus tricolor	Wilson's phalarope	*
Phalaropus lobatus	Red-necked phalarope	
LARIDAE		
Chroicocephalus philadelphia	Bonaparte's gull	
Larus delawarensis	Ring-billed gull	
Larus californicus	California gull	*
Larus argentatus	Herring gull	
Hydroprogne caspia	Caspian tern	
Sterna hirundo	Common tern	*
Sterna forsteri	Forester's tern	
Childonias niger	Black tern	*
COLUMBIDAE		
Columba livia	Rock pigeon	*
Patagioenas fasciata	Band-tailed pigeon	
Steptopela decaocto	Eurasian collared dove	*
Zenaida macroura	Mourning dove	*
CUCULIDAE		
Coccyzus erythropthalmus	Black billed cuckoo	*
Coccyzus americanus	Yellow-billed cuckoo	
TYTONIDAE		
Tyto alba	Barn owl	
STRIGIDAE		
Megascops kennicottii	Western screech-owl	
Megascops asio	Eastern screech-owl	*
Bubo virginianus	Great horned owl	*
Bubo scandiacus	Snowy owl	

[1] Nomenclature from WGFD 2012.

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WILDLIFE SPECIES LIST (cont.)

OBSERVED AND POTENTIAL BIRD INHABITANTS (cont.)		
Scientific Nomenclature[1]	**Common Name**	**Observed**
Athene cunicularia	Burrowing owl	*
Asio otus	Long-eared owl	
Asio flammeus	Short-eared owl	*
Aegolius acadicus	Northern saw-whet owl	*
CAPRIMULGIDAE		
Chordeiles minor	Common nighthawk	*
Phalaenoptilus nuttalli	Common poor-will	
APODIDAE		
Chaetura pelagica	Chimney swift	
Aeronautes saxatalis	White-throated swift	
TROCHILIDAE		
Archilochus alexandri	Black-chinned hummingbird	
Stellula calliope	Calliope Hummingbird	*
Selasphorus platycercus	Broad-tailed hummingbird	
Selasphorus rufus	Rufous hummingbird	
ALCEDINIDAE		
Megaceryle alcyon	Belted kingfisher	*
PICIDAE		
Melanerpes lewis	Lewis's woodpecker	*
Melanerpes erythrocephalus	Red-headed woodpecker	*
Sphyrapicus thyroideus	Williamson's sapsucker	
Sphyrapicus nuchalis	Red-naped sapsucker	*
Picoides pubescens	Downy woodpecker	*
Picoides villosus	Hairy woodpecker	*
Colaptes auratus	Northern flicker	*
TYRANNIDAE		
Contopus cooperi	Olive-sided flycatcher	*
Contopus sordidulus	Western wood peewee	*
Empidonax traillii	Willow flycatcher	*
Empidonax minimus	Least flycatcher	*
Empidonax oberholseri	Dusky flycatcher	
Empidonax occidentalis	Cordilleran flycatcher	
Sayornis saya	Say's phoebe	*
Tyranus vociferans	Cassin's kingbird	
Tyrannus verticalis	Western kingbird	*

[1] Nomenclature from WGFD 2012.

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RECD NOV 14,2014

WILDLIFE SPECIES LIST (cont.)

OBSERVED AND POTENTIAL BIRD INHABITANTS (cont.)		
Scientific Nomenclature[1]	**Common Name**	**Observed**
TYRANNIDAE (cont.)		
Tyrannus tyrannus	Eastern kingbird	*
LANIIDAE		
Lanius ludovicianus	Loggerhead shrike	*
Lanius excubitor	Northern shrike	*
VIREONIDAE		
Vireo plumbeus	Plumbeous vireo	
Vireo gilvus	Warbling vireo	*
Vireo olivaceus	Red-eyed vireo	*
CORVIDAE		
Perisoreus canadensis	Gray jay	*
Cyanocitta stelleri	Stellar's jay	
Cyanocitta cristata	Blue jay	
Gymnorhinus cyanocephalus	Pinyon jay	*
Nucifraga columbiana	Clark's nutcracker	*
Pica hudsonia	Black-billed magpie	*
Corvus brachyrhynchos	Common crow	*
Corvus corax	Common raven	*
ALAUDIDAE		
Eremophila alpestris	Horned lark	*
HIRUNDINIDAE		
Tachycineta bicolor	Tree swallow	*
Tachycineta thalassina	Violet-green swallow	
Stelgidopteryx serripennis	Northern rough-winged swallow	*
Riparia riparia	Bank swallow	
Petrochelidon pyrrhonota	Cliff swallow	*
Hirundo rustica	Barn swallow	*
PARIDAE		
Poecile atricapillus	Black-capped chickadee	*
Poecile gambeli	Mountain chickadee	*
SITTIDAE		
Sitta canadensis	Red-breasted nuthatch	*
Sitta carolinensis	White-breasted nuthatch	*
Sitta pygmaea	Pygmy nuthatch	

[1] Nomenclature from WGFD 2012.

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WILDLIFE SPECIES LIST (cont.)

OBSERVED AND POTENTIAL BIRD INHABITANTS (cont.)		
Scientific Nomenclature[1]	**Common Name**	**Observed**
CERTHIIDAE		
Certhia americana	Brown creeper	*
TROGLODYTIDAE		
Salpinctes obsoletus	Rock wren	*
Catherpes mexicanus	Canyon wren	
Troglodytes aedon	House wren	*
Cistothorus palustris	Marsh wren	
CINCLIDAE		
Cinclus mexicanus	American dipper	
REGULIDAE		
Regulus calendula	Ruby-crowned kinglet	
TURDIDAE		
Sialia sialis	Eastern bluebird	
Sialia mexicana	Western bluebird	*
Sialia currucoides	Mountain bluebird	*
Myadestes townsendi	Townsend's solitaire	*
Catharus fuscescens	Veery	*
Catharus ustulatus	Swainson's thrush	*
Catharus guttatus	Hermit thrush	*
Turdus migratorius	American robin	*
Ixoreus naevius	Varied thrush	
MIMIDAE		
Dumetella carolinensis	Gray catbird	*
Mimus polyglottos	Northern mockingbird	
Oreoscoptes montanus	Sage thrasher	*
Toxostoma rufum	Brown thrasher	*
STURNIDAE		
Sturnus vulgaris	European starling	*
MOTACILLIDAE		
Anthus rubescens	American pipit	
Anthus spragueii	Sprague's pipit	
BOMBYCILLIDAE		
Bombycilla garrulus	Bohemian waxwing	*

[1] Nomenclature from WGFD 2012.

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RECD NOV 14,2014

WILDLIFE SPECIES LIST (cont.)

OBSERVED AND POTENTIAL BIRD INHABITANTS (cont.)		
Scientific Nomenclature[1]	**Common Name**	**Observed**
BOMBYCILLIDAE (cont.)		
Bombycilla cedrorum	Cedar waxwing	*
PARULIDAE		
Mniotilta varia	Black-and-white warbler	
Oreothlypis peregrina	Tennessee warbler	
Oreothlypis celata	Orange-crowned warbler	
Oreothlypis virginiae	Virginia's warbler	
Setophaga petechia	Yellow warbler	*
Setophaga magnolia	Magnolia warbler	*
Setophaga coronata	Yellow-rumped warbler	*
Setophaga ruticilla	American redstart	*
Seiurus aurocapillus	Ovenbird	
Seiurus noveboracensis	Northern waterthrush	
Geothlypis tolmiei	MacGillivray's warbler	
Geothlypis trichas	Common yellowthroat	*
Cardellina pusilla	Wilson's warbler	*
Icteria virens	Yellow-breasted chat	*
THRAUPIDAE		
Piranga ludoviciana	Western tanager	*
Pheucticus ludovicianus	Rose-breasted grosbeak	
Pheucticus meloncephalus	Black-headed grosbeak	*
Passerina caerulea	Blue grosbeak	
Passerina amoena	Lazuli bunting	*
Passerina cyanea	Indigo bunting	
Spiza americana	Dickcissel	
EMBERIZIDAE		
Pipilo chlorurus	Green-tailed towhee	
Pipilo maculatus	Spotted towhee	*
Spizella arborea	American tree sparrow	*
Spizella passerina	Chipping sparrow	*
Spizella pallida	Clay-colored sparrow	
Spizella breweri	Brewer's sparrow	*
Pooecetes gramineus	Vesper sparrow	*
Chondestes grammacus	Lark sparrow	*
Amphispoza belli	Sage sparrow	
Calamospiza melanocorys	Lark bunting	*
Passerculus sandwichensis	Savannah sparrow	*
Ammodramus savannarum	Grasshopper sparrow	*

[1] Nomenclature from WGFD 2012.

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RECD NOV 14, 2014

WILDLIFE SPECIES LIST (cont.)

OBSERVED AND POTENTIAL BIRD INHABITANTS (cont.)		
Scientific Nomenclature[1]	**Common Name**	**Observed**
EMBERIZIDAE (cont.)		
Ammodramus bairdii	Baird's sparrow	
Passerella iliaca	Fox sparrow	
Melospiza melodia	Song sparrow	*
Melospiza lincolnii	Lincoln's sparrow	
Zonotrichia albicollis	White-throated sparrow	
Zonotrichia querula	Harris sparrow	
Zonotrichia leucophrys	White-crowned sparrow	*
Junco hyemalis	Dark-eyed junco	*
CALCARIIDAE		
Rhynchophanes mccownii	McCown's longspur	*
Calcarius lapponicus	Lapland longspur	
Calcarius ornatus	Chestnut-collared longspur	
Plectrophenax nivalis	Snow bunting	
ICTERIDAE		
Dolichonyx oryzivorus	Bobolink	
Agelaius phoeniceus	Red-winged blackbird	*
Sturnella neglecta	Western meadowlark	*
Xanthocephalus	Yellow-headed blackbird	*
Euphagus carolinus	Rusty blackbird	
Euphagus cyanocephalus	Brewer's blackbird	*
Quiscalus quiscula	Common grackle	*
Molothrus ater	Brown-headed cowbird	*
Icterus spurius	Orchard oriole	*
Icterus bullockii	Bullock's oriole	*
Icterus galbula	Baltimore oriole	*
FRINGILLIDAE		
Leucosticte tephrocotis	Gray-crowned rosy-finch	*
Leucosticte atrara	Black rosy-finch	
Pinicola enncleator	Pine grosbeak	*
Carpodacus cassinii	Cassin's finch	
Carpodacus mexicanus	House finch	
Loxia curvirostra	Red crossbill	*
Acanthis flammea	Common redpoll	
Spinus pinus	Pine siskin	
Spinus tristis	American goldfinch	*
Coccothraustes vespertinus	Evening grosbeak	

[1] Nomenclature from WGFD 2012.

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RECD NOV 14,2014

WILDLIFE SPECIES LIST (cont.)

OBSERVED AND POTENTIAL BIRD INHABITANTS (cont.)		
Scientific Nomenclature[1]	**Common Name**	**Observed**
PASSERIDAE		
Passer domesticus	House sparrow	*

OBSERVED AND POTENTIAL HERPTILE INHABITANTS		
AMBYSTOMATIDAE		
Ambystoma tigrinum	Tiger salamander	*
BUFONIDAE		
Spea bombifrons	Plains spadefoot toad	*
Bufo woodhousei woodhousei	Woodhouse's toad	
RANIDAE		
Lithobates pipiens	Northern leopard frog	*
HYLIDAE		
Pseudacris maculata	Boreal chorus frog	*
TESTUDINIDAE		
Apalone spinifera hartwegi	Western spiny softshell	*
Chrysemys picta belli	Western painted turtle	*
CHELYDRIDAE		
Chelydra serpentina	Snapping turtle	*
IGUANIDAE		
Sceloporus graciosus graciosus	Northern sagebrush lizard	*
Phrynosoma hernandesi	Greater short-horned lizard	*
COLUBRIDAE		
Coluber constrictor flaviventris	Eastern yellowbelly racer	*
Lampropeltis triangulum	Pale milk snake	*
Pituophis catenifer sayi	Bullsnake	*
Thamnophis elegans vagrans	Intermountain wandering	*
Thamnophis sirtalis parietalis	Red-sided gartersnake	*
Thamnophis radix	Plains gartersnake	*
CROTALIDAE		
Crotalus viridis viridis	Prairie rattlesnake	*

[1] Nomenclature from WGFD 2012.

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RECD NOV 14,2014

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WILDLIFE SPECIES LIST (CONTINUED)

OBSERVED AND POTENTIAL FISH INHABITANTS		
Scientific Nomenclature[1]	**Common Name**	**Observed**
SALMONIDAE		
Prosopium williamsoni	Mountain whitefish	*
Oncorhynchus clarki	Cutthroat trout	
Oncorhynchus mykiss	Rainbow trout	*
Salmo trutta	Brown trout	*
Salvelinus fontinalis	Brook trout	
ESOCIDAE		
Esox lucius	Northern pike	*
CYPRINIDAE		
Cyprinus carpio	Common carp	*
Carassius auratus	Goldfish	*
Notemigonus crysoleucas	Golden shiner	*
Semotilus atromaculatus	Creek chub	*
Couesius plumbeus	Lake chub	*
Platygobio gracilis	Flathead chub	*
Macrhybopsis gelida	Sturgeon chub	
Rhinichthys cataractae	Longnose dace	*
Notropis stramineus	Sand shiner	*
Hybognathus hankinsoni	Brassy minnow	
Hybognathus placitus	Plains minnow	*
Hybognathus agryritis	Silvery minnow	
Pimephales promelas	Fathead minnow	*
CATOSTOMIDEA		
Carpiodes carpio	River carpsucker	
Moxostoma macrolepidotum	Shorthead redhorse	*
Catostomus commersoni	White sucker	*
Catostomus catostomus	Longnose sucker	*
Catostomus platyrhynchus	Mountain sucker	*
ICTALURIDAE		
Ameiurus melas	Black bullhead	*
Ameiurus naulis	Yellow bullhead	*
Ictalurus punctatus	Channel catfish	*
Noturus flavus	Stonecat	*
GADIDAE		
Lota lota	Burbot	

[1] Nomenclature from WGFD 2012.

TFN 6 2/025
RECD NOV 14,2014

WILDLIFE SPECIES LIST (cont.)

OBSERVED AND POTENTIAL FISH INHABITANTS (cont.)		
Scientific Nomenclature[1]	**Common Name**	**Observed**
CENTRARCHIDAE		
Micropterus dolomieui	Smallmouth bass	*
Micropterus salmoides	Largemouth bass	*
Lepomis cyanellus	Green sunfish	*
Lepomis gibbosus	Pumpkinseed	
Lepomis macrochirus	Bluegill	
Ambloplites rupestris	Rock bass	*
Pomoxis annularis	White crappie	*
Pomoxis nigromaculatus	Black crappie	*
PERCIDAE		
Stizostedion canadense	Sauger	*
Stizostedion vitreum	Walleye	*
Perca flavescens	Yellow perch	*

[1] Nomenclature from WGFD 2012.

TFN 6 2/025
RECD NOV 14, 2014

ATTACHMENT D9-1-B

Correspondence

TFN 6 2/025
RECD NOV 14, 2014

Intermountain Resources
Permit Preparation • Baseline Inventories • Wildlife • Wetlands • Vegetation • Soils
P.O. Box 1589 • Laramie, Wyoming 82073 (307) 745-3803

December 4, 2013

USDI Fish and Wildlife Service
Wyoming Ecological Services Field Office
5353 Yellowstone Road, Suite 308A
Cheyenne, WY 82009

RE: Proposed Brook Coal Mine Permit Area
USFWS Consultation Tracking Number: 06E13000-2014-SLI-0007 (Attached)

Attached is a brief outline of the proposed wildlife baseline data collection plan for the planned Brook Coal Mine permit area which is located north of Sheridan, Wyoming. Underground auguring will be the primary method of mining so surface disturbance will be kept to a minimum. The enclosed map shows the location of the proposed mine permit area. This mine permit area will be approximately 4550 acres and a substantial amount of the area has been included in past wildlife baseline inventories and monitoring (permit areas and one to two mile perimeters) for one or more of the Youngs Creek Coal Mine, Big Horn Coal Mine and Welch No. 1 Coal Mine (Permit Nos. 407, 213, and 497, respectively).

All habitat types present on the proposed Brook Coal Mine permit area have been sampled during previous wildlife baseline inventories.

Please provide us with any questions, comments or revisions. A response would be greatly appreciated.

Sincerely,

Jim Orpet

TFN 6 2/025
RECD NOV 14, 2014

Intermountain Resources
Permit Preparation • Baseline Inventories • Wildlife • Wetlands • Vegetation • Soils
P.O. Box 1589 • Laramie, Wyoming 82073 (307) 745-3803

December 4, 2013

Wyoming Game and Fish Department
Wildlife Habitat Protection Program
5400 Bishop Boulevard
Cheyenne, WY 82006-0001

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All habitat types present on the proposed Brook Coal Mine permit area have been sampled during previous wildlife baseline inventories.

Please provide us with any questions, comments or revisions. A response would be greatly appreciated.

Sincerely,

Jim Orpet

TFN 6 2/025
RECD NOV 14, 2014

Brook Coal Mine

RAMACO – BROOK COAL MINE, SHERIDAN, WYOMING

GENERAL WILDLIFE SURVEY PLAN

November, 2013

Introduction

This wildlife baseline data collection survey plan for the proposed Brook Coal Mine was prepared following review of the substantial amount of wildlife species data collected and provided in the Youngs Creek Coal Mine Permit No. 407, Big Horn Coal Mine Permit No. 213 and the Welch No. 1 Coal Mine Permit No. 497 as well as wildlife monitoring documents on file with the WDEQ-LQD. The proposed Brook Mine Permit area includes portions of the Big Horn Coal Mine permit area and is within about two miles of the Youngs Creek Coal Mine permit area and the Welch No. 1 Coal Mine permit area. Seasonal wildlife surveys were also completed on the proposed Brook Coal Mine and adjacent lands with approved access from April of 2013 through August of 2013. The attached Table 1 provides a summary of the wildlife surveys completed for the approved mine permit areas in the area, Table 2 provides a list of USFWS migratory bird species of conservation concern identified in the area during the 2013 and past surveys, and Table 3 provides a list of wildlife species identified during the 2013 and past surveys and other species with the potential of occurring in the area.

Brook Coal Mine Overview

The proposed Brook Coal Mine is located in Sheridan County, Wyoming, north and west of the town of Sheridan. The specific location is in Township 57 North, Ranges 84 and 85 West and is shown on the attached map. The primary method of mining will be underground through the use of augers. Surface disturbance will be primarily limited to facilities, access roads, haul roads and excavated "slots" from which the auguring will originate. The facilities will most likely be constructed near the existing rail line on land previously disturbed by mining activities or farming activities.

Habitat Mapping and Descriptions

Wildlife habitats will be mapped and defined as required with data included in Appendix D9. Any habitat information presented in Appendix D8 for this area will also be referenced in Appendix D9. Surveys already completed indicate that sagebrush shrubland, upland grassland and rough/scoria breaks are the major habitat types present. Minor types observed include woodland, bottomland grassland/riparian, riverine system and reclaimed lands. These types were surveyed during baseline inventories completed on existing mine permit areas present in the study area.

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Habitat Affinity

Habitat affinities for wildlife species on the area will be determined by data already collected and additional data to be collected for each class of wildlife discussed in the following sections. All wildlife habitat types present have been previously inventoried during surveys completed for the three coal mine permit areas present in the study area.

Big Game

Big game surveys are not planned for this mine permit area. The site does not include any crucial big game ranges. Previous surveys show that the mule deer, white-tailed deer and pronghorn antelope are yearlong residents of the study area. Elk and moose may be uncommon transients through the area.

Upland Game Birds

Lek surveys for sage-grouse and strutting ground surveys for sharp-tailed grouse were completed in April and early May of 2013. The proposed permit area and lands within two miles with approved access were surveyed. Surveys south of I90 were only conducted from legal right-of-ways due to limited access. Previously identified lek locations were surveyed to determine current activity and searches were conducted for new strutting grounds. Lek counts were coordinated with the WGFD and at least three counts were obtained for all leks currently classified as occupied. At least two counts were made on active sharp-tailed grouse strutting grounds identified. Brood surveys are not planned for this project.

Raptors

Raptor nest surveys will be conducted during the breeding season and during all survey periods. Raptor nest surveys began in April of 2013 and will continue through at least March of 2014. Surveys will include the proposed mine permit area and two mile perimeter where access is approved. Surveys south of I90 will primarily be conducted from legal right-of-ways due to limited access. Nest activity and production surveys were completed in March through August of 2013.

Waterfowl and Shorebirds

The proposed Brook Coal Mine permit area contains several small stock ponds, ephemeral streams and small portions of the Tongue River and Goose Creek. Waterfowl use of water bodies in the region has been documented during 2013 and previous surveys conducted for other mines in the area. Additional data will be collected from opportunistic observations and areas of major waterfowl production will be identified if present.

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Passerine Birds

There has been an abundance of breeding bird data collected by the other three coal mines located in the vicinity. Breeding bird transects 1000 meters long by 100 meters wide were sampled on two mornings in June of 2013 in major habitat types on the proposed Brook Coal Mine permit area. The habitat types sampled were upland grassland, sagebrush and breaks. No additional specific surveys are proposed for passerine birds due to the abundance of data already collected on the three mine permit study areas. However, all species of passerine birds observed during the other baseline surveys conducted for this project will be recorded.

Other Mammals – Predators, Small Mammals, Lagomorphs

No specific surveys are proposed for predators or small mammals due to the abundance of data already collected by the Big Horn Coal Mine, the Youngs Creek Coal Mine and the Welch No. 1 Coal Mine located in the vicinity. Lagomorph surveys were completed specifically for this new permit area in July of 2013.

Threatened or Endangered Species

The required surveys will be completed for T&E wildlife species that have the potential for inhabiting the area. The bald eagle, although no longer listed, is known to winter and nest in the area so winter use, winter roost and nesting surveys will be completed for this species. Black-tailed prairie dog towns are present in the area and provide habitat for the black-footed ferret. These prairie dog towns will be mapped, however black-footed ferret surveys are not required based on the USFWS memorandum of 2004 that stated ferret surveys are no longer recommended for black-tailed prairie dog towns in Wyoming. Lynx and wolves are not expected to reside within the area.

USFWS Migratory Bird Species of Conservation Concern (MBHFI)

The attached Table 2 provides a list of the MBHFI species recorded in the area during the other baseline inventories and the expected occurrence on the proposed Brook Coal Mine permit area. Surveys will be completed as required for species that have habitat present on the area. For example prairie dog towns provide habitat for the burrowing owl and mountain plover so surveys for those species were conducted in April through July of 2013. Surveys completed on adjacent mine permit areas will provide the basis for initial determinations of which species are already present. Surveys for specific wildlife species will be implemented when warranted.

Reptiles and Amphibians

No specific surveys are proposed for these species based on limited results of survey techniques available. Surveys completed for the three mine permit areas present have documented most of the reptile or amphibian species that may be present on the proposed Brook Coal Mine permit area as shown in the attached wildlife species list. The

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proposed mine permit area is not expected to have high densities of these species. Any reptile or amphibian species observed during other baseline surveys completed on the area will be documented.

Fish and Macroinvertebrates

Surveys for fish and other aquatic life are not proposed for the Brook Mine permit area. Habitats frequented by these species such as the Tongue River and Goose Creek will not be disturbed by this mine operation. Table 1 shows that several such surveys have already been completed in the general area. The wildlife species list indicates that these aquatic surveys have been fairly thorough by the number and diversity of fish species identified. Most of the fish species were found in Goose Creek and the Tongue River. Other water bodies in the proposed mine permit area are generally ephemeral and would not support fish species. Mine activities will not affect Goose Creek or the Tongue River.

Agency and File Searches

Additional wildlife data should be available from other surveys and inventories completed in the area. Databases will be searched for other data that may be available for the area including that contained by state and federal agencies. This information will be obtained, reviewed and applicable data will be included with the study report as Appendix D9 of the mine permit.

Appendix D9 Wildlife Report Preparation

The applicable results of the previous three baseline inventories (Youngs Creek Coal Mine, Big Horn Coal Mine and Welch No. 1 Coal Mine) will be included in the report for this baseline inventory as required to describe wildlife and habitat affinities for this mine permit area. Data from the additional field surveys conducted in 2013 and 2014 and other available data (file and agency searches) will also be included in the baseline wildlife report for the Brook Coal Mine permit area.

Wetlands

Wetland surveys will be completed as directed by the Corps and will be included in Appendix D10 as required.

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Brook Coal Mine

Brook Coal Mine Proposed Permit Area

Table 1. Summary of past wildlife baseline and monitoring surveys completed by the Youngs Creek Coal Mine Permit No. 407, the Big Horn Coal Mine Permit No. 213 and the Welch No. 1 Coal Mine Permit No. 497.

Surveys Conducted	Youngs Creek* Coal Mine	Big Horn Coal* Mine	Welch No. 1 Coal Mine
Big Game	Yes	Yes	Yes
Upland Game Birds	Yes	Yes	Yes
Raptors	Yes	Yes	Yes
Waterfowl and Shorebirds	Yes	Yes	Yes
Passerine Birds (Belt or Point Transects)	Yes	Yes	Yes
Predators	Yes	Yes	Yes
Lagomorphs	Yes	Yes	Yes
Small Mammal Trapping	Yes	Yes	Yes
Reptiles and Amphibians	Yes	Yes	Yes
Aquatic Sampling	Yes Youngs Creek	Yes Tongue River (Native) Tongue River (Reclaim) Goose Creek Ash Creek Youngs Creek	Yes Tongue River
T&E	Yes	Yes	Yes
MBHFI and Species of Concern	Yes (Included with other bird surveys.)	Yes (Included with other bird surveys.)	Yes (Included with other bird surveys.)
Yearly Wildlife Monitoring Conducted to Date	Yes	Yes	No

* - Wildlife monitoring surveys were completed through 2013 for the Youngs Creek Mine and Big Horn Coal Mine.

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Brook Coal Mine

RAMACO - BROOK Coal Mine proposed Permit Area

Table 2. USFWS Migratory Bird Species of Conservation Concern in Sheridan County, Wyoming, Updated November 2013*.

Species	Regional Seasonal Status	Recorded on Area or in Vicinity	Expected Occurrence On Study Area
American Bittern (*Bataurus lentiginosus*)	Migrant	No	Uncommon
Bald Eagle (*Haliaeetus leucocephalus*)	Winter Migrant/Breeder	Yes	Common/Winter
Brewer's Sparrow (*Spizella breweri*)	Breeder	Yes	Common
Ferruginous Hawk (*Buteo regalis*)	Breeder	Yes	Occasional
Golden Eagle (*Aquila chrysaetos*)	Breeder	Yes	Common
Long-billed Curlew (*Numenius americanus*)	Breeder	Yes	Uncommon
McCown's Longspur (*Calcarius mccownii*)	Breeder	No	Uncommon
Mountain Plover (*Charadrius montanus*)	Breeder	No	Rare
Northern Goshawk (*Accipiter gentilis*)	Migrant	Yes	Rare
Peregrine Falcon (*Falco peregrinus*)	Migrant	No	Rare
Prairie Falcon (*Falco mexicanus*)	Breeder	Yes	Occasional
Sage Sparrow (*Amphispiza belli*)	Breeder	No	Uncommon
Short-Eared Owl (*Asio flammeus*)	Breeder	Yes	Occasional
Swainson's Hawk (*Buteo swainsoni*)	Breeder	Yes	Occasional
Upland Sandpiper (*Batramia longicauda*)	Breeder	Yes	Uncommon
Western Burrowing Owl (*Athene cunicularia hypugea*)	Breeder	Yes	Uncommon

*Based on USFWS Wyoming Ecological Services Field Office, Cheyenne, Wyoming and IPAC (Information, Planning and Conservation System), November, 2013.

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Brook Coal Mine

Table 2. (Continued)

Regional Seasonal Status and expected occurrence compiled from Wyoming Game and Fish Department Atlas of Birds, Mammals, Reptiles and Amphibians in Wyoming, 2012 and Subsequent Revisions

Specific records of observations on area or in the vicinity are from wildlife baseline and monitoring surveys completed for the Youngs Creek Coal Mine Permit No. 407, the Big Horn Coal Mine Permit No. 213 and the Welch No. 1 Coal Mine Permit No. 497.

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WYOMING GAME AND FISH DEPARTMENT

5400 Bishop Blvd. Cheyenne, WY 82006

Phone: (307) 777-4600 Fax: (307) 777-4699

wgfd.wyo.gov

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December 23, 2013

WER 273.01
Intermountain Resources
Proposed Wildlife Baseline Data Collection Plan
Brook Coal Mine Permit Area
Ramaco, LLC
Sheridan County

Jim Orpet
Intermountain Resources
PO Box 1589
Laramie, WY 82073

Dear Mr. Orpet:

The staff of the Wyoming Game and Fish Department has reviewed the proposed Wildlife Baseline Data Collection Plan for the Brook Coal Mine Permit Area from Intermountain Resources on behalf of Ramaco, LLC in Sheridan County. We offer the following comments for your consideration.

Terrestrial Considerations:

We recommend providing two years of baseline wildlife data for this project. As other surveys have been conducted near this area due other coal mine activity, appropriate data collected from nearby may be used to supplement the baseline for the proposed Brook Coal mine. Although no longer required, we suggest providing general observational data on big game use of this area primarily due to its proximity to the riparian areas provided by the Tongue River and Goose Creek. Otherwise, the data collected are appropriate for this project.

Aquatic Considerations:

To minimize impacts to the aquatic resources of the Tongue River and Goose Creek, we recommend the following:

- Accepted best management practices be implemented to ensure that all sediments and other pollutants are contained within the boundaries of the work area. Disturbed areas that are contributing sediment to surface waters as a result of project activities should be promptly re-vegetated to maintain water quality.

"Conserving Wildlife - Serving People"

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- Equipment should be serviced and fueled away from streams and riparian areas. Equipment staging areas should be at least 300 feet from riparian areas.

- Preventing the spread of aquatic invasive species (AIS) is a priority for the State of Wyoming, and in many cases, the intentional or unintentional spread of organisms from one body of water to another would be considered a violation of State statute and Wyoming Game and Fish Commission Regulation. To prevent the spread of AIS, the following is required:

  If equipment has been used in a high risk infested water [a water known to contain Dreissenid mussels* (zebra/quagga mussels)], the equipment must be inspected by an authorized aquatic invasive species inspector recognized by the state of Wyoming prior to its use in any Wyoming water.

  Any equipment entering the State by land from March through November (regardless of where it was last used), must be inspected by an authorized aquatic invasive species inspector prior to its use in any Wyoming waters.

  If aquatic invasive species are found, the equipment will need to be decontaminated by an authorized aquatic invasive species inspector.

  Any time equipment is moved from one 4th level (8-digit) Hydrological Unit Code watershed to another within Wyoming, the following guidelines are recommended:

  DRAIN: Drain all water from watercraft, gear, equipment, and tanks. Leave wet compartments open to dry.
  CLEAN: Clean all plants, mud, and debris from vehicle, tanks, watercraft, and equipment.
  DRY: Dry everything thoroughly. In Wyoming, we recommend drying for 5 days in Summer (June - August); 18 days in Spring (March - May) and Fall (September - November); or 3 days in Winter (December - February) when temperatures are at or below freezing.

*A list of high risk infested waters and locations in Wyoming to obtain an AIS inspection can be found at: wgfd.wyo.gov

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Thank you for the opportunity to comment. If you have any questions or concerns, please contact Paul Mavrakis, Sheridan Region Fisheries Supervisor, at 307-672-7418 Ext. 236.

Sincerely,

Scott Gerro

for Mark Konishi
Deputy Director

MK/mf/gb

cc: USFWS
Paul Mavrakis, Sheridan Region
Tim Thomas, Sheridan Region
Lynn Jahnke, Sheridan Region

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United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
5353 Yellowstone Road, Suite 308A
Cheyenne, Wyoming 82009

DEC 12 2013

In Reply Refer To:
06E13000/WY14CPA0035 and WY14SLI0007

Mr. Jim Orpet
Intermountain Resources
P.O. Box 1589
Laramie, Wyoming 82073

Dear Mr. Orpet:

Thank you for your letter of December 4, 2013, received in our office on December 5, regarding the proposed wildlife baseline data collection plan for the planned Brook Coal Mine permit area located in in T57N, R84 and 85W, Sheridan County, Wyoming. The permit area is approximately 4,550 acres and will consist primarily of underground auguring. In your letter, you request the U.S. Fish and Wildlife Service (Service) provide you with comments on the wildlife baseline data collection plan (Plan).

General Comments for General Wildlife Survey Plan

All aspects of mine development need to be considered when conducting surveys. This should include any surface disturbance comprising of, but not limited to, building construction and stock piling of coal, roads and parking lot. If the project includes overhead power lines, these lines should be constructed or retrofitted to meet or exceed the Avian Power Line Interaction Committee (APLIC) guidelines (APLIC 2006), and we encourage the development of a Migratory Bird Conservation Plan (MBCP) or an Avian Protection Plant (APP) as described in the APP Guidelines (APLIC 2006).

Specific Comments for General Wildlife Survey Plan

Habitat Mapping and Description, pg. 1: Surveys completed during baseline inventories on existing mine permit areas that overlap with the proposed mine area may be included in the Plan, but these inventories must be current and the entire permit area of the proposed new mine must be surveyed to ensure that all habitat types are included. These surveys should be conducted at the appropriate time of year for the species surveyed and include surveys for threatened and endangered species which shall be on or within one (1) mile of the permit area pursuant to WDEQ-LQD Coal Mines Rules and Regulations, Chapter 2 § 4(a)(vi)(A). These surveys should also include important habitat types such as the acreage of rough breaks and rocky outcrops that

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are important raptor nesting habitat. These two habitat types in particular should be replaced during reclamation on a one to one ratio.

Raptors, pg. 2: Surveys may be done in winter months to locate raptor nests, but surveys to determine which nests are occupied and what species are occupying the nest as well as the activity of the nest should be conducted at the appropriate time of year. Active nests should be monitored until it has been determined that the young have fledged or the nest has failed.

Waterfowl and Shorebirds, pg. 2: In order to ensure that mining and associated activities do not disrupt waterfowl and shorebirds, the baseline survey should include data collection on these species.

Passerine Birds, pg. 3: Surveys completed during baseline inventories on existing mine permit areas that overlap the proposed mine area may be included in the Plan, but these inventories must be current and the entire permit area of the proposed new mine must be surveyed to ensure that all passerine birds observed are recorded.

Threatened or Endangered Species, pg. 3:

Ute ladies'-tresses - Ute ladies'-tresses (*Spiranthes diluvialis*) is listed as occurring in Sheridan County and should be included in the Plan. This plant is a perennial orchid, 8 to 20 inches tall, with white or ivory flowers clustered into a spike arrangement at the top of the stem. Ute ladies'-tresses typically blooms from late July through August. However, it may bloom in early July or still be in flower as late as early October, depending on location and climatic conditions. Ute ladies'-tresses is endemic to moist soils near wetland meadows, springs, lakes, and perennial streams where it colonizes early successional point bars or sandy edges. The elevation range of known occurrences is 4,200 to 7,000 feet (although no known populations in Wyoming occur above 5,500 feet). Soils where Ute ladies'-tresses have been found typically range from fine silt/sand, to gravels and cobbles, as well as to highly organic and peaty soil types. Ute ladies'-tresses is not found in heavy or tight clay soils or in extremely saline or alkaline soils. Ute ladies'-tresses typically occurs in small, scattered groups found primarily in areas where vegetation is relatively open.

Many orchid species take 5 to 10 years to reach reproductive maturity; this appears to be true for Ute ladies'-tresses (FR 57 2048). Furthermore, reproductively mature plants do not flower every year. For these reasons and to clear the area for the orchid's presence, two to three years of surveys are necessary to determine presence or absence of Ute ladies'-tresses within the permit area, not just the area disturbed during this permit's term. Surveys should be conducted by knowledgeable botanists trained in conducting rare plant surveys.

Bald Eagle - We appreciate your commitment to perform winter roost and nesting surveys for the bald eagle although it is no longer listed under the Endangered Species Act of 1973, as amended (ESA), 16 U.S.C. 1531 *et seq.*

Northern long-eared bat - As of October 2, 2013, the northern long-eared bat (*Myotis septentrionalis*) was proposed for listing under the ESA as an endangered species (October 2,

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2013; 78 FR 61046). Critical habitat is not proposed at this time. This bat is a medium-sized bat, distinguished from other *Myotis* species by its characteristically large ears and long, pointed tragus (projection of skin in front of the external ear). Northern long-eared bats are found throughout eastern and central North America and occur in the extreme northeastern portions of Wyoming. Northern long-eared bats emerge at dusk to fly through the understory of forested hillsides and ridges feeding on moths, flies, leafhoppers, caddisflies, and beetles, which they catch in flight using echolocation, or by gleaning (picking) from vegetation. In the summer, male and reproductive female bats roost singly or in colonies in cracks, crevices, cavities, and under the bark of live and dead trees, while other males and non-reproductive females roost in cooler places like caves and mines. Breeding occurs in late summer and fall when bats swarm at entrances of hibernacula; however, females delay fertilization until spring when they emerge from hibernation.

The northern long-eared bat is threatened by white-nose syndrome (WNS), a disease caused by the cold-loving fungus, *Psuedogymnoascus* (*Geomyces*) *destructans*. First observed in New York in 2006, WNS has spread rapidly across the Northeast and into the Midwest and Southeast. Throughout the range of WNS, up to 99 percent of infected bats die from the disease. Although there is uncertainty about the spread of WNS, experts agree that the fungus will likely spread throughout the United States. The northern long-eared bat is also threatened by the loss and degradation of summer habitat caused by human development, and by collision with or barotrauma (injury to the lungs due to a change in air pressure) caused by wind turbines. Mine closures and vandalism of winter roosts and hibernacula also pose threats to this species.

We recommend surveys in areas that may provide potential habitat for the northern long-eared bat such as stands of tall trees, if such habitat exists on the proposed mine area.

USFWS Migratory Bird Species of Conservation Concern (MBHFI), pg. 3: This section states that "Surveys for specific wildlife species will be implemented when warranted." Although it is appropriate to include baseline information from other mining area inventories that overlap with the proposed mine area, this information must be current and must include the entire permit area of the proposed mine to ensure that all MBHFI observed are recorded.

We appreciate your efforts to ensure the conservation of endangered, threatened, and candidate species and migratory birds. If you have further questions regarding this letter or your responsibilities under the Act, please contact Kim Dickerson at the letterhead address or by phone at (307) 772-2374, extension 230.

Sincerely,

For R. Mark Sattelberg
Field Supervisor
Wyoming Field Office

TFN 6 2/025
RECD NOV 14, 2014

cc: WDEQ-LQD, District Supervisor, Sheridan, WY (M. Rogaczewski)
WGFD, Non-game Coordinator, Lander, WY (B. Oakleaf)
WGFD, Statewide Habitat Protection Coordinator, Cheyenne, WY (M. Flanderka)

References

Avian Power Line Interaction Committee (APLIC). 2006. Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006. Edison Electric Institute, APLIC, and the California Energy Commission. Washington, D.C. and Sacramento, CA.

Avian Protection Plan Guidelines . 2005. Edison Electric Institute's Avian Power Line Interaction Committee and U.S. Fish and Wildlife Service.

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
WYOMING ECOLOGICAL SERVICES FIELD OFFICE
5353 Yellowstone Rd, Suite 308A
CHEYENNE, WY 82009
PHONE: (307)772-2374 FAX: (307)772-2358
URL: www.fws.gov/wyominges/

Consultation Tracking Number: 06E13000-2014-SLI-0007 November 06, 2013
Project Name: RAMACO BROOK COAL MINE, Sheridan, Wyoming

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

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, and proposed species, designated critical habitat, and candidate species 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 (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, 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 Environmental Conservation Online System-Information, Planning, and Conservation System (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 enclosed list.

Please feel free to contact us if you need more information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. We also encourage you to visit the Wyoming Ecological Services website at http://www.fws.gov/wyominges/Pages/Species/Species_Endangered.html for more information about species occurrence and designated critical habitat.

The purpose of the Act 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 Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to use their authorities to carry out programs for the conservation of threatened and endangered

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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 (or other undertakings having similar physical impacts) 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. Recommended contents of a biological assessment are described at 50 CFR 402.12.

If a Federal 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

We also recommend that you consider the following information when assessing impacts to federally listed species, as well as migratory birds, and other trust resources:

Colorado River and Platte River Systems: Consultation under section 7 of the Act is required for projects in Wyoming that may lead to water depletions or have the potential to impact water quality in the Colorado River system or the Platte River system, because these actions may affect threatened and endangered species inhabiting the downstream reaches of these river systems. In general, depletions include evaporative losses and/or consumptive use of surface or groundwater within the affected basin, often characterized as diversions minus return flows. Project elements that could be associated with depletions include, but are not limited to: ponds, lakes, and reservoirs (e.g., for detention, recreation, irrigation, storage, stock watering, municipal storage, and power generation); hydrostatic testing of pipelines; wells; dust abatement; diversion structures; and water treatment facilities.

Species that may be affected in the Colorado River system include the endangered bonytail (*Gila elegans*), Colorado pikeminnow (*Ptychocheilus lucius*), humpback chub (*Gila cypha*), and razorback sucker (*Xyrauchen texanus*) and their designated critical habitats. Projects in the Platte River system may impact the endangered interior population of the least tern (*Sterna antillarum*), the endangered pallid sturgeon (*Scaphirhynchus albus*), the threatened piping plover (*Charadrius melodus*), the threatened western prairie fringed orchid (*Platanthera praeclara*), as well as the endangered whooping crane (*Grus americana*) and its designated critical habitat. For more information on consultation requirements for the Platte River species, please visit http://www.fws.gov/platteriver.

Migratory Birds: The Migratory Bird Treaty Act (16 U.S.C. 703-712), prohibits the taking of any migratory birds, their parts, nests, or eggs except as permitted by regulations, and does not require intent to be proven. Except for introduced species and some upland game birds, almost all birds occurring in the wild in the United States are protected (50 CFR 10.13). Guidance for

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minimizing impacts to migratory birds for projects that include 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.

The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d) prohibits knowingly taking, or taking with wanton disregard for the consequences of an activity, any bald or golden eagles or their body parts, nests, or eggs, which includes collection, molestation, disturbance, or killing. Eagle nests are protected whether they are active or inactive. Removal or destruction of nests, or causing abandonment of a nest could constitute a violation of one or both of the above statutes. Projects affecting eagles may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

If nesting migratory birds are present on or near the project area, timing of activities is an important consideration and should be addressed in project planning. Activities that could lead to the take of migratory birds or eagles, their young, eggs, or nests, should be coordinated with our office prior to project implementation. If nest manipulation (including removal) is proposed for the project, the project proponent should contact the Migratory Bird Office in Denver at 303-236-8171 to see if a permit can be issued for the project. If a permit cannot be issued, the project may need to be modified to protect migratory birds, eagles, their young, eggs, and nests.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. 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.

Attachment

TFN 6 2/025
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United States Department of Interior
Fish and Wildlife Service

Project name: RAMACO BROOK COAL MINE, Sheridan, Wyoming

Official Species List

Provided by:

WYOMING ECOLOGICAL SERVICES FIELD OFFICE
5353 Yellowstone Rd, Suite 308A

CHEYENNE, WY 82009
(307) 772-2374
http://www.fws.gov/wyominges/

Consultation Tracking Number: 06E13000-2014-SLI-0007
Project Type: Mining
Project Description: Coal Mine, Primarily underground auger mining. Located in Sheridan County, Wyoming in Sections 7, 8, 9, 10, 15, 17, 18, 19, 20 and 22, T57N, R84W and Sections 10, 11, 12, 13, 14, 15, 23 and 24, T57N, R85W.

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United States Department of Interior
Fish and Wildlife Service

Project name: RAMACO BROOK COAL MINE, Sheridan, Wyoming

Project Counties: Sheridan, WY

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United States Department of Interior
Fish and Wildlife Service

Project name: RAMACO BROOK COAL MINE, Sheridan, Wyoming

Endangered Species Act Species List

Species lists are not entirely based upon the current range of a species but may also take into consideration actions that affect a species that exists in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Please contact the designated FWS office if you have questions.

Canada Lynx *(Lynx canadensis)*

Population: (Contiguous U.S. DPS)

Listing Status: Threatened

Greater sage-grouse *(Centrocercus urophasianus)*

Population: entire

Listing Status: Candidate

Ute ladies'-tresses *(Spiranthes diluvialis)*

Listing Status: Threatened

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This resource list is to be used for planning purposes only — it is not an official species list.

Endangered Species Act species list information for your project is available online and listed below for the following FWS Field Offices:

Wyoming Ecological Services Field Office
5353 YELLOWSTONE ROAD, SUITE 308A
CHEYENNE, WY 82009
(307) 772-2374
http://www.fws.gov/wyominges/

Project Name:

Brook Mine

Project Counties:

Sheridan, WY

Project Type:

Mining

Endangered Species Act Species List (USFWS Endangered Species Program).

There are a total of 3 threatened, endangered, or candidate species on your 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 fishes may appear on the species list because a project could cause downstream effects on the species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section below for critical habitat that lies within your project area. Please contact the designated FWS office if you have questions.

Species that should be considered in an effects analysis for your project:

Birds	Status		Has Critical Habitat	Contact

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Greater sage-grouse (*Centrocercus urophasianus*) Population: entire	Candidate	species info		Wyoming Ecological Services Field Office
Flowering Plants				
Ute ladies'-tresses (*Spiranthes diluvialis*)	Threatened	species info		Wyoming Ecological Services Field Office
Mammals				
Canada Lynx (*Lynx canadensis*) Population: (Contiguous U.S. DPS)	Threatened	species info	Proposed critical habitat Final designated critical habitat	Wyoming Ecological Services Field Office

If a species' status is Candidate, please also contact the Wyoming Game & Fish Department for additional information regarding State conservation concerns for these species. Wyoming Game & Fish can be reached at Wyoming Game & Fish Department Headquarters, 5400 Bishop Blvd. Cheyenne, WY 82006 or (307) 777-4600.

Critical habitats within your project area:

There are no critical habitats within your project area.

FWS National Wildlife Refuges (USFWS National Wildlife Refuges Program).

There are no refuges found within the vicinity of your project.

FWS Migratory Birds (USFWS Migratory Bird Program).

The protection of birds is regulated by the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA). Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. For more information regarding these Acts see http://www.fws.gov/migratorybirds/RegulationsandPolicies.html.

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All project proponents are responsible for complying with the appropriate regulations protecting birds when planning and developing a project. To meet these conservation obligations, proponents should identify potential or existing project-related impacts to migratory birds and their habitat and develop and implement conservation measures that avoid, minimize, or compensate for these impacts. The Service's Birds of Conservation Concern (2008) report identifies species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become listed under the Endangered Species Act as amended (16 U.S.C 1531 et seq.).

For information about Birds of Conservation Concern, go to http://www.fws.gov/migratorybirds/CurrentBirdIssues/Management/BCC.html.

Migratory birds of concern that may be affected by your project:

More information on migratory birds, including eagles and raptors in Wyoming can be found at: http://www.fws.gov/wyominges/Pages/Species/Species_SpeciesConcern/BirdsConsvConcern.html.

There are 16 birds on your Migratory birds of concern list. The Division of Migratory Bird Management is in the process of populating migratory bird data with an estimated completion time of Fall 2014; therefore, the list below may not include all the migratory birds of concern in your project area at this time. While this information is being populated, please contact the Field Office for information about migratory birds in your project area.

Species Name	Bird of Conservation Concern (BCC)	Species Profile	Seasonal Occurrence in Project Area
American bittern (*Botaurus lentiginosus*)	Yes	species info	Breeding
Bald eagle (*Haliaeetus leucocephalus*)	Yes	species info	Year-round
Black Rosy-Finch (*Leucosticte atrata*)	Yes	species info	Year-round
Brewer's Sparrow (*Spizella breweri*)	Yes	species info	Breeding
Burrowing Owl (*Athene cunicularia*)	Yes	species info	Breeding
Calliope Hummingbird (*Stellula calliope*)	Yes	species info	Breeding
Cassin's Finch (*Carpodacus cassinii*)	Yes	species info	Year-round
Ferruginous hawk (*Buteo regalis*)	Yes	species info	Breeding
Golden eagle (*Aquila chrysaetos*)	Yes	species info	Year-round

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Grasshopper Sparrow (*Ammodramus savannarum*)	Yes	species info	Breeding
Greater sage-grouse (*Centrocercus urophasianus*)	Yes	species info	Year-round
Mountain plover (*Charadrius montanus*)	Yes	species info	Breeding
Pinyon Jay (*Gymnorhinus cyanocephalus*)	Yes	species info	Year-round
Prairie Falcon (*Falco mexicanus*)	Yes	species info	Year-round
Williamson's Sapsucker (*Sphyrapicus thyroideus*)	Yes	species info	Breeding
Willow Flycatcher (*Empidonax traillii*)	Yes	species info	Breeding

NWI Wetlands (USFWS National Wetlands Inventory).

The U.S. Fish and Wildlife Service is the principal Federal agency that provides information on the extent and status of wetlands in the U.S., via the National Wetlands Inventory Program (NWI). In addition to impacts to wetlands within your immediate project area, wetlands outside of your project area may need to be considered in any evaluation of project impacts, due to the hydrologic nature of wetlands (for example, project activities may affect local hydrology within, and outside of, your immediate project area). It may be helpful to refer to the USFWS National Wetland Inventory website. The designated FWS office can also assist you. Impacts to wetlands and other aquatic habitats from your project may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal Statutes. Project Proponents should discuss the relationship of these requirements to their project with the Regulatory Program of the appropriate U.S. Army Corps of Engineers District.

Data Limitations, Exclusions and Precautions
The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

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The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery and/or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Exclusions - Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Precautions - Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

The following wetland types intersect your project area in one or more locations:

Wetland Types	NWI Classification Code	Total Acres
Freshwater Emergent Wetland	PEMF	48.2977
Freshwater Emergent Wetland	PEMA	105.7378
Freshwater Emergent Wetland	PEMC	265.749
Freshwater Emergent Wetland	PEMB	364.8414
Freshwater Emergent Wetland	PEMAd	5.5182
Freshwater Emergent Wetland	PEMCh	52.5189
Freshwater Emergent Wetland	PEMAh	76.0035
Freshwater Emergent Wetland	PEMCd	9.5057
Freshwater Emergent Wetland	PEMCb	10.9562

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Freshwater Emergent Wetland	PEMCx	3.9807
Freshwater Emergent Wetland	PEMFh	7.3181
Freshwater Forested/Shrub Wetland	PFOB	20.8694
Freshwater Forested/Shrub Wetland	PFOA	2.9652
Freshwater Forested/Shrub Wetland	PFOC	2.3145
Freshwater Forested/Shrub Wetland	PSSAh	0.9365
Freshwater Forested/Shrub Wetland	PSSCb	13.1704
Freshwater Forested/Shrub Wetland	PSSA	67.0921
Freshwater Forested/Shrub Wetland	PSSB	131.521
Freshwater Forested/Shrub Wetland	PSSC	21.5969
Freshwater Forested/Shrub Wetland	PFOAh	0.2614
Freshwater Pond	PUBFx	11.8798
Freshwater Pond	PABFh	116.8332
Freshwater Pond	PUSCh	30.7848
Freshwater Pond	PABKx	1.0565
Freshwater Pond	PABGh	0.1848
Freshwater Pond	PABG	52.9075
Freshwater Pond	PABF	2.4865
Freshwater Pond	PUBHh	16.8928
Freshwater Pond	PABGb	4.9311
Other	PUSC	0.0983
Other	PUSAh	14.0874
Riverine	R3UBH	7.4084
Riverine	R2UBF	965.9167
Riverine	R2USC	76.58
Riverine	R2USA	15.9438

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Riverine	R3USA	7.4382

Wyoming State Natural Resources of Concern

There may be resources of concern to the State of Wyoming that are not specifically addressed here. The Service recommends that users access the Wyoming Interagency Spatial Database & Online Management (WISDOM) System, which allows users to visually explore the distribution of important Wyoming wildlife habitat, identify potential stressors to wildlife, and review other relevant data that will assist in wildlife conservation planning in the State of Wyoming.

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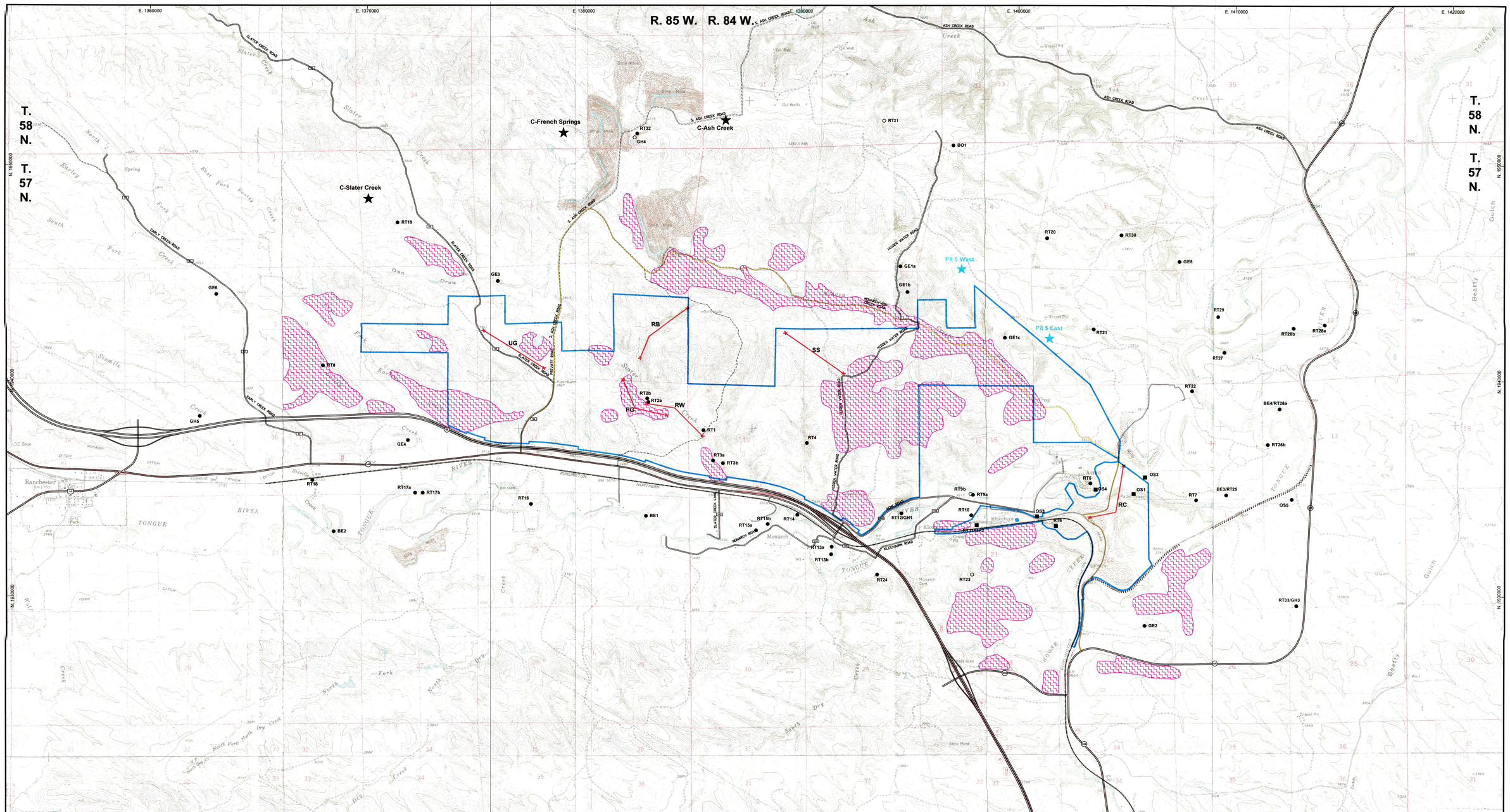

LEGEND

- BROOK MINE PERMIT BOUNDARY
- INTACT RAPTOR NEST
- INTACT RAPTOR PLATFORM NEST
- FORMER RAPTOR NEST
- LAGOMORPH SURVEY ROUTE
- BREEDING BIRD SURVEY TRANSECT

BE - BALD EAGLE
GE - GOLDEN EAGLE
RT - RED TAILED HAWK
GH - GREAT HORNED OWL
BO - BURROWING OWL
OS - OSPREY

- SAGE-GROUSE LEK
- SHARP-TAILED GROUSE LEK
- BLACK-TAILED PRAIRIE DOG COLONY

PG - PRAIRIE DOG TOWN GRASSLAND
UG - UPLAND GRASSLAND
SS - SAGEBRUSH SHRUBLAND
RC - RECLAIMED LANDS
RB - ROUGH BREAKS/JUNIPER
RW - RIPARIAN WOODLAND

N

0 1,000 2,000 3,000 4,000
GRAPHIC SCALE (FEET)

RAMACO

BROOK MINE
SHERIDAN COUNTY, WY

1101 SUGARVIEW DR, STE. 201
SHERIDAN, WY 82801

REVISIONS	
Date	Description
06/15	ROUND 1 COMMENTS

ADDENDUM D9-1
EXHIBIT 1

WILDLIFE INVENTORY

TFN 6 2/025
RECD JUL 30, 2015

Drawn By: MBM/RET
Checked By: JGB/JEO
Date: 10/6/14

WWC ENGINEERING
www.wwcengineering.com

FILE: ADDENDUM_D9-1_WILDLIFE_INVENTORY.dwg

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