ECOLOGY FIELD STUDY REPORT
PROPOSED SITE FOR THE
EAGLE ROCK ENRICHMENT FACILITY
BONNEVILLE, IDAHO

FALL 2008 SURVEY

Prepared for:

AREVA
4800 Hampden Lane, Suite 1100
Bethesda, MD 20814

Prepared by:

MWH
3663 JFK Parkway, Suite 206
Fort Collins, Colorado 80525
(970) 377-9410

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1.0 INTRODUCTION

An ecological field survey was conducted on the proposed site for the Eagle Rock Enrichment Facility (EREF) during the week of October 20, 2008. The purpose of this field study was to collect site-specific ecological resource data at the proposed EREF site. The data was used to further characterize the ecological communities on the proposed site including vegetation and animal species. In addition, the inventory was conducted to determine the presence/absence of threatened and endangered species habitat, and other sensitive habitats.

2.0 METHODS

Shrub density was quantified using belt transects on the proposed EREF in order to more robustly describe vegetation characteristics at the site. Previous field studies (June, 2008) recorded species presence, cover, and vertical structure for the site. To quantify shrub density, sixteen sample points were located on the site within the sagebrush steppe (13 sample points) and seeded crested wheatgrass (3 sample points) vegetation types. One, one hundred-m^2 (1076-ft^2) plot was established originating at each point (**Figure 1**). One, 50-m (164-ft) tape was extended from the point; oriented north-south. All shrub species located within 1-m (3.28-ft) to either side of the transect were recorded. In addition to species, shrubs were categorized into one of two size classes: less than 40-cm (15.8-in) in height, or greater than/equal to 40-cm (15.8-in) in height. This height stratification was performed to further describe the area in terms of potential habitat for greater sage-grouse, as most sage-grouse use breeding habitats characterized by sagebrush 40-80 cm (15.8-31.5 in) tall (Connelly, 2003). A pole marked with 40-cm and 1-m gradations was used to measure shrub height and perpendicular distance from transect, respectively.

Animal presence and abundance were determined using the same line transects and point count locations established during previous field studies (June, 2008). Line transects were walked in sagebrush and seeded crested wheatgrass vegetation types 30 minutes before sunrise to 1.0 hours after sunrise. Transects were at least 0.4 km (0.25 mi) apart (**Figure 1**). Species composition and relative abundance were determined based on visual observations of animals, signs (e.g., tracks, scat, nests, burrows), and vocalizations. Gender and age (i.e., juvenile and adult) were noted when possible. Behavior also was noted (e.g., in flight, territorial establishment, nesting, perching). Point counts were conducted in the irrigated crop fields and sampled during the evening of October 23 (**Figure 1**).

3.0 RESULTS

3.1 VEGETATION

Three vegetation types were previously identified on the EREF: sagebrush steppe, seeded crested wheatgrass, and irrigated crops. Sagebrush steppe and seeded crested wheatgrass types were sampled for shrub density. No shrub vegetation exists on the irrigated crop type.

3.1.1 SAGEBRUSH STEPPE

The sagebrush steppe vegetation type of the proposed site is characterized by the dominance of Wyoming big sagebrush (*Artemisia tridentata* var. *wyomingensis*) and dwarf goldenbush (*Ericameria nana*). Shrub species account for 34% of the total cover and 57% of the relative cover in this community type (MWH, 2008).

Average shrub density in the sagebrush community, including both size classes, is approximately 7,430 shrubs/ha (3,007 shrubs/ac) (**Table 1**). Wyoming big sagebrush is the tallest and largest shrub in this community, and densities of this species are approximately 6,900 shrubs/ha (2,792 shrubs/ac) for the ≥40-cm size-class, and 6,000 shrubs/acre (2,428 shrubs/acre) for the <40-cm size class. Dwarf goldenbush does not attain the stature or height of big sagebrush, and its growth habit is often classified as subshrub (a low-growing shrub usually under 0.5 m (1.5 feet) tall, never exceeding 1 meter (3 feet) tall at maturity) (USDA, 2008). Dwarf goldenbush occurs at a relatively high density as a subshrub in this community, with a density of approximately 16,600 shrubs/ha (6,718 shrubs/ac) for the <40-cm size class. It does not often achieve a height of ≥40-cm in this community, and occurs at an approximate density of 300 shrubs/ha (121 shrubs/ac) for this size class.

3.1.2 SEEDED CRESTED WHEATGRASS

The seeded crested wheatgrass vegetation type is characterized by the dominance of grasses, primarily crested wheatgrass (*Agropyron cristatum*) and cheatgrass (*Bromus tectorum*). Shrubs comprised only trace amounts of the total vegetation cover. Wyoming big sagebrush, rubber rabbitbrush (*Chrysothamnus nauseosus*), and dwarf goldenbush were all recorded in the seeded crested wheatgrass type, each representing less than 0.5% total cover. (MWH, 2008). While dominated by seeded and invasive grasses, small, isolated sections of this community have a shrub overstory. These areas occur in several locations where outcrops of basalt precluded full mechanical type conversion of this community from shrubland to grassland. Although these shrub-dominated outcrops are not representative of the grassland matrix in which they are found, targeted sampling of three outcrops was conducted in order to compare the shrub densities of these small relict sagebrush stands with those of the adjacent sagebrush community.

Average shrub density on the outcrops found in the seeded crested wheatgrass community, including both size classes, is approximately 1,310 shrubs/ha (526 shrubs/ac) (**Table 2**). Densities of Wyoming big sagebrush are approximately 2,100 shrubs/ha (850 shrubs/ac) for the ≥40-cm size-class, and 1,800 shrubs/acre (728 shrubs/acre) for the <40-cm size class. Densities of dwarf goldenbush are approximately 100 shrubs/ha (40 shrubs/ac) for the ≥40-cm size-class, and 2,100 shrubs/acre (850 shrubs/acre) for the <40-cm size class. Densities of rubber rabbitbrush are approximately 600 shrubs/ha (243 shrubs/ac) for the ≥40-cm size-class, and 1,100 shrubs/acre (445 shrubs/acre) for the <40-cm size class.

3.2 WILDLIFE

Animal species, identified during transect and point sampling, are listed in **Tables 3**, **4**, and **5**. Most animals identified were birds, although some mammals were also observed.

A total of 7 bird species were positively identified in the sagebrush community. The most common bird species encountered in the sagebrush community during avian transect surveys was the horned lark (*Eremophila alpestris*) (79.9% of the total number of birds observed). Other bird species encountered include the Brewer's sparrow (*Spizella breweri*) (11.5% of the total number of birds observed), and American crow (*Corvus brachyrhynchos*) (4.3% of the total number of birds observed) (**Table 3**). Other birds encountered included the black-billed magpie (*Pica hudsonia*) sage sparrow (*Amphispiza belli*), mourning dove (*Zenaida macroura*), and northern harrier (*Circus cyaneus*).

A total of 5 bird species were positively identified in the seeded crested wheatgrass vegetation type. The most common bird species encountered included horned lark (74.4% of the total number of birds observed), mourning dove (9.3% of the total number of birds observed), and American crow (9.3% of the total number of birds observed) (**Table 4**). The only other bird species encountered were the black-billed magpie and northern harrier.

A total of 5 bird species were also positively identified in the irrigated crop vegetation type. The most common species encountered during avian point-count surveys included the horned lark (82.0% of the total number of birds observed), American crow (8.2% of the total number of birds observed), and mourning dove (6.6% of the total number of birds observed) (**Table 5**). The only other bird species encountered were the black-billed magpie and the northern harrier.

Several mammal species were identified during transect and point count samples and through incidental observations (**Appendix A**). Pronghorn (*Antiliocapra americana*), a coyote (*Canis latrans*), chipmunks (*Tamias minimus*), and a deer mouse (*Peromyscus maniculatus*) were observed during field sampling.

3.3 PROTECTED AND SENSITIVE SPECIES

3.3.1 PROTECTED AND SENSITIVE PLANTS

Three plant species were identified as potentially being present on the proposed site. One threatened plant species, Ute ladies' tresses (*Spiranthes diluvialis*) has been observed in Bonneville County and had a potential to be present on the proposed site. Two sensitive plant species, red glasswort (*Salicornia rubra*) and earth lichen (*Catapyrenium congestum*) also were considered as potentially being present on the site based on a literature and records review.

None of these plant species or habitat required for these species was observed on the proposed site.

3.3.2 PROTECTED AND SENSITIVE ANIMALS

Three sensitive species associated with big sagebrush habitat, ferruginous hawk (*Buteo regalis*), pygmy rabbit (*Brachylagus idahoensis*), and greater sage grouse (*Centrocercus urophasianus*) are known in the region. The site and surrounding areas are big sagebrush habitat, which is used by these species. This habitat is primarily found in the western portion of the site. No sign or sightings of ferruginous hawks, pygmy rabbits, or greater sage grouse were observed during the October survey.

4.0 FIELD SURVEY SUMMARY

Overall, animal detections on the proposed EREF were lower than those made during summer field surveys. Many of the bird species observed during the summer were non-resident passerines, and have likely migrated with the changing seasons. Greater sage grouse, or their sign, were not observed on site during this Fall survey. By far, the most common bird encountered was the horned lark, a ubiquitous resident of the Snake River Plain.

When the fall surveys were initiated on October 21, the sagebrush steppe portion of the proposed EREF, from the western edge of the center-pivots to the border with the State land to the West, was at the end of a grazing rotation. Approximately 250-300 head, mostly cow-calf pairs, were present, and had apparently been on this part of the proposed site for some time. Grazing and trampling was evident throughout the area. On October 22, gates were opened, and the cows were allowed onto the eastern portion of the property. By October 23, all of the cattle had been moved to the irrigated crop portion of the site to graze the stubble of this year's crops.

4.0 LITERATURE CITED

Connelly, 2003. Monitoring of Greater Sage-grouse Habitats and Populations, University of Idaho College of Natural Resources Experiment Station Bulletin 80, J. W. Connelly, K.P. Reese, and M. A. Schroeder, Moscow, Idaho, 2003.

MWH, 2008. Ecology Field Study Report for the Proposed Eagle Rock Enrichment Facility, Bonneville Idaho. MWH, June 2008.

USDA, 2008. USDA Plants Database – Growth Habits Codes and Definitions. USDA, Natural Resource Conservation Service, 2008. Available online: http://plants.usda.gov/growth_habits_def.html. Accessed October 29, 2008.

Table 1 Sagebrush Steppe Shrub Density on the Proposed Eagle Rock Enrichment Facility Site (*n=13*)

species/ height class[1]	ARTR <40	ARTR ≥40	ERNA2 <40	ERNA2 ≥40
avg. per plot	59.7	68.5	165.9	3.3
std dev	20.4	11.0	33.1	2.4
Density (ha)	6,000/ha	6,900/ha	16,600/ha	300/ha
Density (ac)	2,428/ac	2,792/ac	6,718/ac	121/ac

[1]Note: Height Class: <40 = less than 40 cm; ≥40 = greater than or equal to 40 cm
USDA Plant Species codes:
ARTR = *Artemisia tridentata* var. *wyomingensis* (Wyoming big sagebrush)
ERNA2 = *Ericameria nana* (Dwarf goldenbush)

Table 2 Seeded Crested Wheatgrass Shrub Density on the Proposed Eagle Rock Enrichment Facility Site (*n=3*)

species/ height class[1]	ARTR <40	ARTR ≥40	ERNA2 <40	ERNA2 ≥40	CHNA <40	CHNA ≥40
avg. per plot	18.0	21.3	21.3	0.7	11.3	5.7
std dev	9.6	13.3	8.3	1.2	8.7	1.2
Density (ha)	1,800/ha	2,100/ha	2,100/ha	100/ha	1,100/ha	600/ha
Density (ac)	728/ac	850/ac	850/ac	40/ac	445/ac	243/ac

[1]Note: Height Class: <40 = less than 40 cm; ≥40 = greater than or equal to 40 cm
USDA Plant Species codes:
ARTR = *Artemisia tridentata* var. *wyomingensis* (Wyoming big sagebrush)
ERNA2 = *Ericameria nana* (dwarf goldenbush)
CHNA = *Chrysothamnus nauseosus* (rubber rabbitbrush)

Table 3 Wildlife Transect Survey Data Summary for the Proposed Eagle Rock Enrichment Facility Site – Sagebrush Steppe

Species		Total Number[1]	% of Total Number
Horned Lark	*Eremophila alpestris*	111	79.9
Northern Harrier	*Circus cyaneus*	1	0.7
Brewer's Sparrow	*Spizella breweri*	16	11.5
Sage Sparrow	*Amphispiza belli*	2	1.1
Mourning Dove	*Zenaida macroura*	1	1.4
American Crow	*Corvus brachyrhynchos*	6	4.3
Black-billed Magpie	*Pica hudsonia*	2	1.1
Unknown		0	0
Total Birds		**139**	**100**

[1] Note: Includes birds observed, heard, or sign observed (e.g., feathers, nests, roosts)

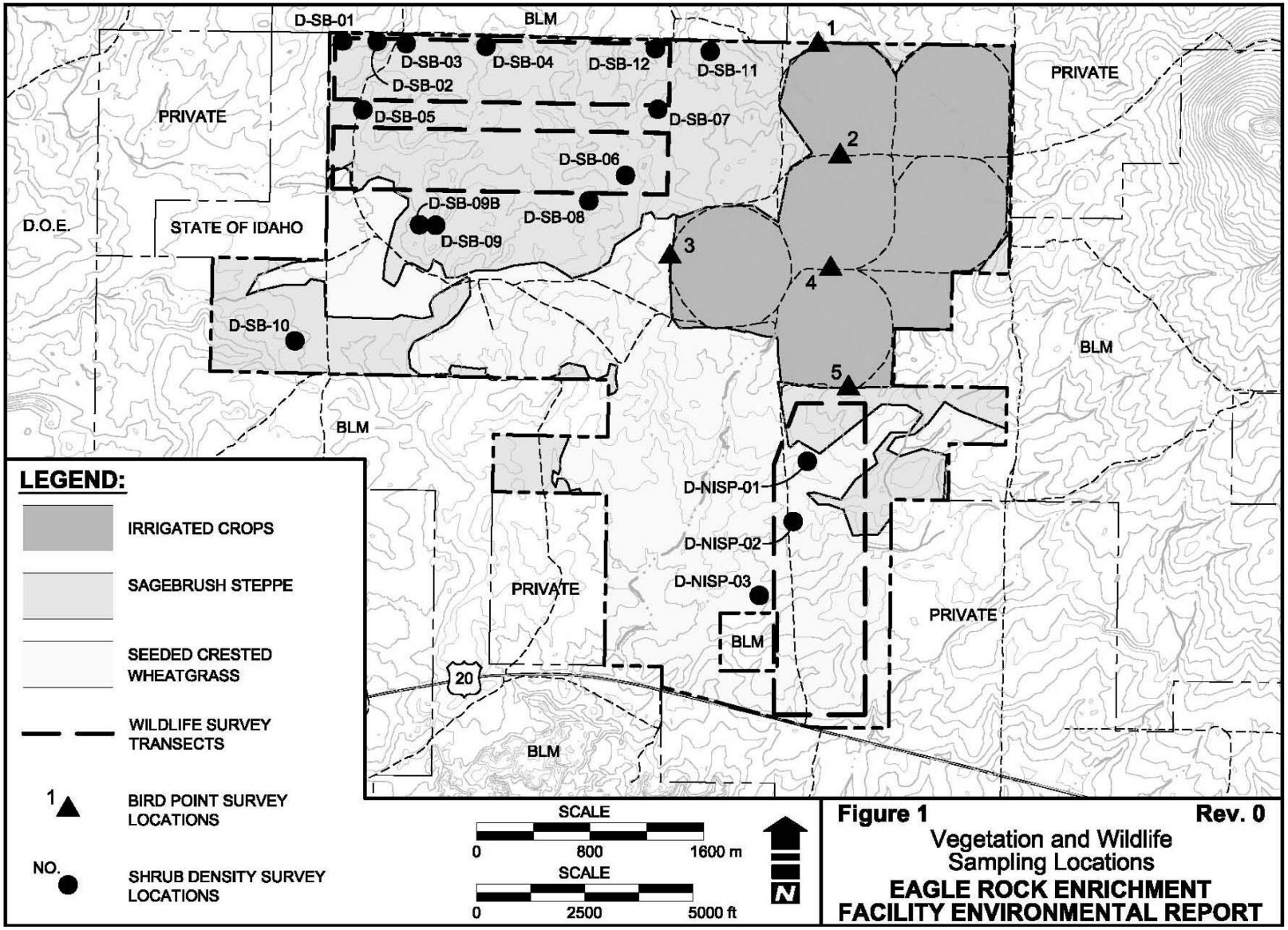
Table 4 Wildlife Transect Survey Data Summary for the Proposed Eagle Rock Enrichment Facility Site - Seeded Crested Wheatgrass

Species		Total Number[1]	% of Total Number
Horned Lark	*Eremophila alpestris*	32	74.4
Northern Harrier	*Circus cyaneus*	1	2.3
Brewer's Sparrow	*Spizella breweri*	0	0.0
Sage Sparrow	*Amphispiza belli*	0	0.0
Mourning Dove	*Zenaida macroura*	4	9.3
American Crow	*Corvus brachyrhynchos*	4	9.3
Black-billed Magpie	*Pica hudsonia*	2	4.7
Unknown		0	0.0
Total Birds		**43**	**100**

[1] Note: Includes birds observed, heard, or sign observed (e.g., feathers, nests, roosts)

Table 5 Avian Point Survey Data Summary for the Proposed Eagle Rock Enrichment Facility Site- Irrigated Crops

Species		Total	% Observed	Pt 1	Pt 2	Pt 3	Pt 4	Pt 5
Horned Lark	*Eremophila alpestris*	50	82.0	14	10	9	10	7
Northern Harrier	*Circus cyaneus*	1	1.6					1
Brewer's Sparrow	*Spizella breweri*	0	0.0					
Sage Sparrow	*Amphispiza belli*	0	0.0					
Mourning Dove	*Zenaida macroura*	4	6.6		2			2
American Crow	*Corvus brachyrhynchos*	5	8.2	1		1	3	
Black-billed Magpie	*Pica hudsonia*	1	1.6					1
Greater Sage Grouse	*Centrocercus urophasianus*	0	0.0					
Unknown		0	0.0					
Total		**61**	**100**	15	12	10	13	11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BLM
D-SB-03
D-SB-04
D-SB-12
D-SB-11
D-SB-02
PRIVATE
D-SB-05
D-SB-07
D-SB-06
D-SB-09B
D-SB-08
D-SB-09
D.O.E.
STATE OF IDAHO
D-SB-10
BLM
PRIVATE
BLM
1
2
3
4
5
D-NISP-01
D-NISP-02
D-NISP-03
PRIVATE
PRIVATE
BLM
20
BLM
LEGEND:
IRRIGATED CROPS
SAGEBRUSH STEPPE
SEEDED CRESTED WHEATGRASS
WILDLIFE SURVEY TRANSECTS
BIRD POINT SURVEY LOCATIONS
NO.
SHRUB DENSITY SURVEY LOCATIONS
SCALE
0 800 1600 m
SCALE
0 2500 5000 ft
N
Figure 1
Rev. 0
Vegetation and Wildlife Sampling Locations
EAGLE ROCK ENRICHMENT FACILITY ENVIRONMENTAL REPORT

APPENDIX A

OCTOBER 2008 WILDLIFE TRANSECT SURVEY
DATA SUMMARY SHEETS
PROPOSED EAGLE ROCK ENRICHMENT FACILITY

Sagebrush Steppe Habitat – October 22, 2008 transects

Species	Heard	Observed	Sign	Total	Comments
Horned lark	15	44		59	on the ground and overhead
Northern Harrier				0	
Brewer sparrow	6	2		8	
Sage sparrow				0	
Mourning dove				0	
Crow		4		4	
Black-billed magpie				0	
Sage grouse				0	
Unknown				0	
Coyote				0	
Badger				0	
Pronghorn				0	
Pygmy rabbit				0	
Jack rabbit				0	
Least chipmunk				0	
Deer mouse				0	
TOTAL	**21**	**50**	**0**	**71**	

Sagebrush Steppe Habitat – October 23, 2008 transects

Species	Heard	Observed	Sign	Total	Comments
Horned lark	17	35		52	
Northern Harrier		1		1	male
Brewer sparrow	7	1		8	
Sage sparrow	2			2	
Mourning dove		1		1	
Crow		2		2	
Black-billed magpie		2		2	
Sage grouse				0	
Unknown				0	
Coyote				0	
Badger				0	
Pronghorn				0	
Pygmy rabbit				0	
Jack rabbit				0	
Least chipmunk		5		5	
Deer mouse		1		1	
TOTAL	**26**	**48**	**0**	**74**	

Seeded Crested Wheatgrass Habitat – October 21, 2008 transects

Species	Heard	Observed	Sign	Total	Comments
Horned lark	9	23		32	
Northern Harrier		1		1	male
Brewer sparrow				0	
Sage sparrow				0	
Mourning dove		4		4	
Crow		4		4	
Black-billed magpie		2		2	
Sage grouse				0	
Unknown				0	
Coyote		1		1	moving quickly to east
Badger				0	
Pronghorn		1		1	
Pygmy rabbit				0	
Jack rabbit				0	
Least chipmunk		2		2	basalt outcrop
Deer mouse				0	
TOTAL	**9**	**38**	**0**	**47**	