

Exhibit 4A
Biological Assessment

**PROPOSED
RIO OXBOW LAND EXCHANGE**

BIOLOGICAL ASSESSMENT

Prepared For:

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BIOLOGICAL ASSESSMENT OF THE PROPOSED RIO OXBOW LAND EXCHANGE

I. INTRODUCTION

A proposal, regarding the exchange of U.S. Forest Service-administered federal lands for private lands (non-federal) has been made to the Rio Grande National Forests (RGNF). As a part of the decision-making process the USFS requires the preparation of a Biological Assessment, as mandated by the Endangered Species Act, to evaluate potential effects of the proposed project on federally listed threatened and endangered plant and wildlife species.

The proposed action would involve the permanent transfer of approximately 468.78 acres of National Forest System lands (federal lands) located in Mineral County from public to private ownership. It would also result in the transfer of approximately 1,134.63 acres of private lands (non-federal lands) in Mineral, Rio Grande and Hinsdale Counties to federal ownership. The location of these lands is more specifically described in Tables 1 and 2.

II. PROJECT DESCRIPTION

PURPOSE AND NEED

Due to the juxtaposition of private and public lands on both the non-federal lands and federal lands, a high potential for administration conflicts exists between the Forest Service and associated private landowners. On the federal lands irregular or complicated boundaries, dissecting highways, and lack of public access makes land management difficult or impractical for many of the subject properties. The non-federal lands, all of which are partially or completely surrounded by public lands, are at risk of becoming administrative problems due to differing land management goals and objectives of the Forest Service and the private landowners. This proposal would simplify current boundaries, reduce the amount of private inholdings within the National Forest boundaries, secure public access, and would generally reduce the overall administrative issues arising from the management of public lands adjacent to private lands. It would also protect resource values, such as wildlife, recreation and wetlands, on the non-federal parcels by placing them under the administrative control of the USFS.

PROPOSAL DESCRIPTION

In 1999 the Non-Federal Parties submitted an exchange proposal to the Rio Grande National Forest. The Forest Service carefully reviewed all aspects of this proposal. This

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Table 1
GENERAL DESCRIPTION
OF
FEDERAL LANDS

TRACT #	ACRES	TOWNSHIP/ RANGE	SECTION #	DESCRIPTION
N1	37.82	T41NR1W	SEC. 3	SW ¹ / ₄ SE ¹ / ₄
N2	80.00	T41NR1W	SEC. 10	W ¹ / ₂ NW ¹ / ₄
N3	Removed			
N4	84.60	T40NR2W	SEC. 25	Portions W ¹ / ₂ NW ¹ / ₄
N5	15.00	T40NR2W	SEC. 36	Portions W ¹ / ₂ NW ¹ / ₄
N6	12.50	T40NR2W	SEC. 36	Portions SW ¹ / ₂ SE ¹ / ₄
L1	4.06	T40NR2W	SEC. 14	Portions SW ¹ / ₄ NE ¹ / ₄
L2	19.59	T40NR2W	SEC. 11	Portions SE ¹ / ₄ SW ¹ / ₄
L3	1.11	T40NR2W	SEC. 10	Portions E ¹ / ₂ NW ¹ / ₄
L4	0.04	T40NR2W	SEC. 4	Portions SE ¹ / ₄ SE ¹ / ₄
L5	214.06	T40NR2W	SEC. 9	Portions S ¹ / ₂ SE ¹ / ₄
			SEC. 14	Portions SW ¹ / ₄
			SEC. 15	Portions NE ¹ / ₄ , SE ¹ / ₄ , NW ¹ / ₄
			SEC. 16	Portions NE ¹ / ₄ NE ¹ / ₄
			SEC. 23	Portions N ¹ / ₂
TOTAL FEDERAL LANDS 468.78 ACRES				

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TABLE 2.
GENERAL DESCRIPTION
OF
NON-FEDERAL LANDS

TRACT	APPROX .ACRES	TOWNSHIP/ RANGE	SECTION #	DESCRIPTION
<u>Long Ridge</u>				
LR1	1.95	T40NR2W	SEC. 4	Portions SW ¹ / ₄ SE ¹ / ₄
LR2	11.44	T40NR2W	SEC. 10	Portions NW ¹ / ₄ SE ¹ / ₄ , NE ¹ / ₄ SW ¹ / ₄
LR3	15.11	T40NR2W	SEC. 10	Portions N ¹ / ₂ SE ¹ / ₄ SE ¹ / ₄
		T40NR2W	SEC. 11	Portions SW ¹ / ₄ SW ¹ / ₄
LR4	30.38	T40NR2W	SEC.14	Portions NW ¹ / ₄ NE ¹ / ₄ , Portions NE ¹ / ₄ NW ¹ / ₄
LR5	32.91	T40NR2W	SEC. 13	Portions SW ¹ / ₄ NW ¹ / ₄
		T40NR2W	SEC. 14	Portions SE ¹ / ₄ NE ¹ / ₄
<u>Total Long Ridge</u>		91.79 Acres		
<u>Bonafacio</u>				
B1	153.96	T38NR6E	SEC. 4	SW ¹ / ₄ NW ¹ / ₄
		T38NR6E	SEC. 5	SE ¹ / ₄ NE ¹ / ₄ , N ¹ / ₂ SE ¹ / ₄
B2	155.44	T38NR6E	SEC. 9	W ¹ / ₂ W ¹ / ₂
B3	153.15	T38NR6E	SEC. 8	W ¹ / ₂ NE ¹ / ₄ , NW ¹ / ₄ SE ¹ / ₄ , N ¹ / ₂ SW ¹ / ₄
B4	215.81	T38NR6E	SEC. 18	S ¹ / ₂ N ¹ / ₂ , W ¹ / ₂ SE ¹ / ₄
<u>Total Bonafacio:</u>		678.36 Acres		
<u>Carson</u>				
Hays Pl.	133.87	T42NR5W	SEC. 24	Portions S ¹ / ₂
			SEC. 25	Portions N ¹ / ₂
Continental Divide Claims	230.61	T41NR4W	SEC. 6	Portions
		T41NR5W	SEC. 1, 2	Portions
		T42NR4W	35	Portions
		T42NR5W	SEC. 35, 36	Portions
<u>Total Carson:</u>		364.48 Acres		
TOTAL NON-FEDERAL LANDS: 1,134.63 ACRES				

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process resulted in a number of modifications to the Federal and Non-Federal tracts. Tables 1 & 2 show the current proposal. However, the proposed action is being reviewed through an environmental assessment that includes alternatives that may further alter the configuration of both the Federal and Non-Federal parcels.

As currently proposed through this exchange, 468.78 acres of National Forest land would be conveyed to full private ownership and 1,134.64 acres of private lands would be conveyed to public ownership under the administration of the Rio Grande and GMUG National Forests.

MITIGATION

The following design and mitigation have been offered by the Non-Federal Parties in this proposal to minimize potential effects to the resources occurring on and adjacent to the Federal parcels involved in this exchange proposal. The restrictions to land-use described below would be imposed through covenants and would be recorded in the official records of Mineral County at the time of conveyance.

N4, N5 and N6-A covenant would prohibit development in any designated lynx habitat. This area would include essentially the entire forested portion of these parcels encompassing approximately 70 acres currently suitable lynx habitat. There would also be a prohibition of commercial timber harvest in the forested portion of these parcels. Additionally, no development or habitat disturbance would be permitted in wetland areas (approximately 6 acres) to address concerns regarding western boreal toad, as well as other wetlands issues.

L5-A covenant will prohibit any commercial timber harvesting in the forested portion of this parcel. Lynx habitat on all but a small portion of the parcel would also be protected from other habitat disruptive activities, such as residential and road development. It is the stated intention of the owner of Rio Oxbow Ranch, one of the Non-Federal Parties, to retain the right to develop up to a total of five residential dwellings on the ranch. To reduce visual impacts he would like to use the forest edge as partial visual screening for any buildings that might be constructed. The exact location of these development sites has not been determined at this time but all may occur in what is currently the L5 or some may include sites on land currently owned by ranch. It is estimated that each development site would result in a surface disturbance of approximately one acre. Additionally, covenants will restrict disturbance to wetland areas and their hydrologic function and prohibit development within floodplains in this parcel to address wetland and floodplain issues, as well as protecting habitat for candidate (western boreal toad) and sensitive wildlife species.

III. PRE-FIELD REVIEW AND FIELD INVESTIGATIONS

A pre-field checklist of threatened and endangered plant and wildlife species known to occur or potentially occur on the RGNF was developed with the aid of Forest wildlife and botany specialists, Colorado Division of Wildlife personnel, and with information

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provided by the U.S. Fish and Wildlife Service. The general biology and description of the preferred habitat of each individual species was compared to habitat conditions present within the analysis area using maps, aerial photos and the surveyor's general knowledge of the area. Species whose preferred habitat might be present on the federal parcels were noted and given emphasis during the field examination of the area. Field surveys of the project area were conducted in September 1999 and August 2001 to determine habitat potential and evidence of habitation for those species indicated by the pre-field investigations.

Federally listed species or Category 1 wildlife species on the FWS's list for the Rio Grande National Forest that were considered but not discussed in detail in this analysis include the black-footed ferret, southwestern willow flycatcher, Mexican spotted owl and Uncompahgre fritillary butterfly. The black-footed ferret depends primarily on prairie dog colonies, which are apparently not present within the project area. The southwestern willow flycatcher inhabits lower elevational riparian habitats (below 8,500 feet). In this portion of its range Mexican spotted owl occupies lower elevational narrow canyons in the lower mixed-conifer and ponderosa pine forest habitats, typically with a significant rock component. The Uncompahgre fritillary butterfly inhabits high-elevation alpine sites with snow willow (*Salix reticulata nivalis*), which are not found on the federal lands. However, some suitable habitat for this species may occur on the non-federal tracts (Continental Divide properties) that would move to federal ownership through this proposal.

Federally listed plant species that were considered but not evaluated due to lack of suitable habitat include Mancos milkvetch, clay-loving buckwheat, Knowlton's miniature cactus and Ute ladies' tresses orchid.

Suitable habitat is present on several of the federal tracts for the western boreal toad, a candidate for listing. Potential effects to this species are addressed in the Biological Evaluation for this proposal, which is on file with the Rio Grande National Forest.

It was determined through the evaluation process that the Canada lynx and bald eagle, both listed as threatened species by the FWS, could potentially be affected by the proposed action. Therefore, the remainder of this assessment will describe conditions and effects pertinent to these species.

IV. DESCRIPTION OF AFFECTED ENVIRONMENT

The following descriptions are limited to those lands that have or lie adjacent to suitable bald eagle habitat, or Canada lynx habitat as defined by the Rio Grande and GMUG National Forests' lynx habitat analysis depicted in the associated Lynx Analysis Units (LAUs). Through the analysis it was determined that, on the federal parcels, suitable bald eagle habitat may be present in N2, N4, N5, N6 and L5 and suitable lynx habitat is present in N4, N5, N6 and L5. On the non-federal parcels suitable lynx habitat was

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present in B4 and the Hays Placer. There is no suitable bald eagle habitat on the non-federal parcels.

FEDERAL LANDS

The federal lands lie generally within the Rio Grande and Trout Creek drainages. These parcels range in elevation from 8,700 to 9,200 feet in elevation and lie within two miles of each other. Each of these parcels is comprised of mesic forest cover interspersed with mesic and semi-xeric mountain meadow.

HISTORIC, CURRENT AND FUTURE LAND USE

The general historic use for the federal lands, under USFS administration, has been primarily livestock grazing, where forage was available, and some very limited timber harvesting (L5). Grazing still continues on N2 and on a limited basis in N6. Parcels N4, N5 and L5 lie within an inactive S&G allotment and would probably not be included in this allotment were it re-issued. Streams that flow through N6 (Trout Creek) and L5 (Workman and Woodfern Creek) have been partially or completely diverted to private reservoirs located on adjacent private lands. The federal parcels provide dispersed recreational opportunities, such as hiking, hunting and fishing. However, due to the juxtaposition of adjacent private lands access to most of these federal lands is not readily available to the general public. Therefore, overall dispersed use of these lands by the public has probably been, and continues to be limited.

Past and current land uses on the adjacent National Forest System lands have been similar to that experienced on the lands proposed for exchange, with the exception of the area immediately above N4, N5 and L5, which was heavily logged during the 1960's and 70's. This area has only marginally recovered from that activity.

Livestock grazing and forage production has also been and continues to be the primary land use on the private lands adjacent to the federal tracts proposed for exchange. Very low-density residential development has occurred on lands adjacent to N5, N6 and L5. A small resort is located immediately southwest of the southeast corner of N2 along the river. Clients of the resort use the river in N2 for fishing. The non-federal parties in this exchange proposal have indicated that it is their intention to maintain the current land use on their lands and on the exchange parcels (federal lands) into the foreseeable future.

Through this exchange the USFS would relinquish jurisdictional control over the indicated federal parcels and Forest Plan guidelines for the protection of threatened and endangered species would no longer be applicable. However, the USFS would gain administrative control of the offered lands, which may tend to offset potential impacts to habitat for some species. The private owners would still be required to adhere to guidelines mandated by the Endangered Species Act and the FWS as they pertain to threatened and endangered wildlife and plant species and to the Clean Water Act as they pertain to wetlands.

INDIVIDUAL PARCEL DESCRIPTIONS

N2 (Bald Eagle)

This 80-acre parcel lies on the Rio Grande at an elevation of approximately 8,800 feet. Private lands abut this area on three sides with USFS lands on its western side. Due to drainage patterns that run through or adjacent to this tract there is significant variation in its topographical and vegetative character. The general orientation of the area is to the southeast. The northern one-half of the tract drains in to Shallow Creek, a small perennial stream flowing southwest, approximately 200 feet from the area's northeast corner. This vegetative cover in this area is comprised of approximately 10% shrubs, 40% grass/forb and 50% bare ground. There are no trees in this portion of the tract. A relatively steep and incised, intermittent drainage runs diagonally across the lower one-third of this parcel from west to east, joining the Rio Grande just outside its southeastern boundary. The channel cuts down to and through bedrock for much of its length through the property. The south-facing slopes on the northern side of this drainage pattern are similar in vegetative character to the northern portion of this tract, but tend to have a greater shrub and herbaceous cover. The steep (75%) northern-facing slope of the drainage is forest covered with an essentially pure stand of blue spruce roughly 4 acres in size. These trees are somewhat stunted by the harshness of the site (shallow soils) and show significant signs of decadence. Snag density is roughly 4-5/acre with low to moderate levels of coarse woody debris. Spiked tops are common.

On the opposite (southern) side of the ridge from this area the landform drops precipitously in the Rio Grande which flows through the extreme southern portion of the parcel. This forms a cliff structure approximately 150 feet in height, which continues down below the surface of the river. A small portion of the parcel extends across the river to its southern side. Most of this area is in abandoned pasture occupied by a grass/forb cover. An intermittent narrow band (<5 feet) of sparse riparian habitat lines the river in this area.

N4 (Bald Eagle And Canada Lynx)

This 84.6- acre parcel is located along the western edge of the Trout Creek flood plain within an adjacent intermittent drainage to Trout Creek at an elevation of 9,000 feet. Approximately two-thirds of the area is covered in medium-aged, mixed-conifer upland forest. The average age of the larger trees is roughly 100 years. The forest cover is dominated by blue spruce (50-60% cover). Aspen comprises roughly 25-30% of the cover and Douglas fir makes up less than 10% of the total cover. Engelmann spruce and subalpine fir are also sparsely scattered through the canopy but generally do not comprise a significant portion of the canopy cover. The coniferous component is beginning to overtop the mature aspen, which is beginning to breakup as a result of this competition.

Coarse woody debris is typically low to moderate in concentration over most of the area. Snag densities average between 3-5/acre. Slope gradients within the forested area range

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from 15-45% with an average of approximately 25%. The remaining one-third of the parcel is comprised of open meadow. Most of this is upland grass/forb with scattered low shrubs (shrubby cinquefoil and rabbitbrush) on gently sloping southeast-facing hillsides. The soils here are typically rocky with gravel present on the surface. The eastern edge of the parcel lies within a drainage depression and includes approximately 5 acres of riparian/wetland habitat. A 1½ to 2-acre natural pond is also located on the eastern edge of the tract. This pond is relatively shallow (< 4 feet in depth) and did not appear to support a fish population at the time of the survey. The pond is surrounded by a dense stand of sedge grass and scattered willow up to 15 feet in height.

N5 (Bald Eagle And Canada Lynx)

This roughly 15-acre tract lies predominantly above the western edge of the Trout Creek flood plain. Several dwellings and outbuildings associated with an adjacent ranch lie at the eastern edge of the property. Most of this parcel is situated on the lower slopes rising out of the flood plain. Slopes range in gradient from 5-40% with a highly variable orientation due to drainage patterns, which dissect the parcel. An intermittent, moderately incise drainage cuts through the center of the area flowing from the southwest corner toward the northeast. The northern arm of an approximately 10-acre reservoir extends into the extreme southeastern corner of the area. The vegetative cover is very diverse, varying with slope orientation and position. The south-facing slopes tend to be dominated by open grass/forb with a scattered shrub and tree component. Fescue and muhly are generally the most significant cover species within the herbaceous component. These slopes exhibit somewhat poorly developed shallow rocky soils and this habitat is typically dry due to the soils composition and exposure. The more moist north-facing slopes and gently sloping ridgetops have a moderately dense intermediate-aged (<100 year) forest cover comprised of a mix of primarily blue spruce and aspen. Douglas fir and Engelmann spruce are also present but do not comprise a significant portion of the overall canopy. The aspen is becoming overtopped by the conifer component and is beginning to breakup in some areas. Snag densities average approximately 3/acre within the forested habitat with low to moderate levels of coarse woody debris. The extreme southeastern corner of the parcel lies within the Trout Creek floodplain and includes approximately two acres of the reservoir. The outflow to the lake is located in the northeast end of this arm. Riparian/wetland habitat occurs along the eastern shore and is dominated by dense sedgegrass. A small portion of a dense stand of willow also extends into the parcel in this area. The wetland area, including this portion of the reservoir comprises roughly 3 acres.

N6 (Bald Eagle And Canada Lynx)

This 12.5-acre parcel lies almost entirely within the Trout Creek floodplain at an elevation of approximately 9,000 feet. Trout Creek flows through the center of this tract from west to east. A large portion of this tract is comprised of riparian/wetland habitat. Large, mature cottonwood and blue spruce line much of the stream bank. Moderately dense stands of willow and alder lie along the stream beneath the tree canopy. A variety of wetland obligate and facultative herbaceous species is well represented in the ground cover. Approximately one acre of wetland meadow extends into the extreme northwest

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corner of the tract. This area is occupied by dense sedgegrass. The slope rises abruptly in the southeast corner of the parcel at an approximately 40% gradient. This upland area covers approximately 2 acres. The vegetative cover here is dominated by uneven-aged blue spruce with an associated mix of Douglas fir, Engelmann spruce and subalpine fir. The overall snag density within this parcel is roughly 2/acre with moderate levels of coarse woody debris.

L5 (Bald Eagle And Canada Lynx)

This 214.06-acre parcel lies along the southwestern border of the Rio Oxbow ranch. The area is primarily comprised triangles that extend into the ranch in a stair-step fashion. Most of this area is situated on steep, forested northeast facing slopes. The corners of the three triangular areas in the north extend into the meadowland and open pasture that lies in or directly above the Rio Grande floodplain. The very southern end of this parcel also extends into the open floodplain. The slopes on which most of this parcel is located are characterized by varying gradients ranging from rock cliffs to gently rolling hillsides and narrow gently sloping floodplains. The slope gradients range from 80% to 2% with an average probably exceeding 35%. Several cliffs and rock outcrops occur intermittently throughout this parcel. These vary significantly in size and character. The largest cliff face is roughly 40 feet in height.

Roughly 80% of this parcel is forested with a highly variable forest cover. Included in this is mixed-conifer comprised of Douglas fir, Engelmann spruce, blue spruce and aspen, as well as clumps of mature and immature aspen with conifer understories. Age classes and densities within this area are also highly variable with essentially all age and density classes represented. The shrub layer beneath the forest canopy is moderately well represented with buffaloberry (*Shepherdia canadensis*), common juniper (*Juniperus communis*), serviceberry (*Amelanchier alnifolia*), kinnickinick (*Arcostaphylos uva-ursi*), Oregon grape (*Mahonia repens*) and wild rose (*Rosa woodsii*). The herbaceous layer is well represented with red columbine (*Aquilegia elegantula*), meadowrue (*Thalictrum fendleri*), strawberry (*Fragaria sp.*), geranium (*Geranium sp.*), mules ear (*Wyethia amplexicaulis*), sagewort (*Artemisia franserioides*), bedstraw (*Galium septentrionale*), false Solomon's seal (*Maianthemum amplexicaule*) and fern leaf lousewort (*Pedicularis bracteosa*).

The distribution of coarse woody debris is highly variable but quite heavy in some areas. Standing dead trees of all species are present at moderate levels but are not evenly distributed across the forested area.

As mentioned above, small areas of open wet and dry meadows are found on the lower slopes in the northern and extreme southern end of the parcel. The dry meadows are dominated by typically moist and dry site pasture grasses. The wet meadows are occupied primarily by sedgegrasses (*Carex sp.*) and tufted hairgrass (*Deschampsia cespitosa*). The total wetland area is approximately 2 acres.

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Two perennial streams flow through this parcel, Woodfern Creek and Workman Creek. These are both direct tributaries to the Rio Grande. These streams flow through the second and third triangles from the northern end of the parcel. Both of these streams are characterized by moderately high gradients, which decreases significantly toward the floodplain of the river. The flow of Workman Creek is completely diverted to the reservoir located on the Rio Oxbow ranch. An irrigation channel runs along the bottom of the slope, most of which is located on private lands. A portion of the flow of Woodfern Creek has also been diverted, via a natural stream course, to this irrigation channel. The remainder of the Woodfern flow follows the natural channel through the corner of the triangle, into the floodplain. Seeps from the irrigation channel and ground saturation from the lake have formed a wetland area that lies directly west of reservoir. This wetland area lies partially within this parcel.

NON-FEDERAL LANDS

The private lands offered for exchange to the USFS are located in three distinct areas. These are the Long Ridge (LR) properties located on the north side of Highway 149, the Bonafacio properties located approximately 10 miles southwest of Monte Vista, Colorado and the Carson properties located near the Continental Divide approximately 24 miles west of Creede. Only two of the non-federal tracts in this exchange has been identified as having suitable habitat for the lynx. The Hays Placer, which is part of the Continental Divide properties is more specifically described as: Portions W½ SEC. 25 T42NR5W.

B4 (Canada Lynx)

This approximately 215.81-acre tract lies within the Bonafacio Creek drainage 11.5 miles southwest of Monte Vista at an elevation averaging roughly 9,600 feet. This parcel is dissected by two intermittent drainages creating a landform dominated by moderately steep and narrow valleys interrupted by narrow ridges. Due to the drainage patterns the slope aspect is highly variable but is generally toward the north. The vegetative cover is diverse but is dominated by open shrub and grasslands interspersed with clumps of forest cover. Shrub densities are generally low and are dominated by currant (*Ribes sp.*) and rabbit brush (*Chrysothamus sp.*). The forest cover is a mix of mixed conifer/aspen and clonal aspen stands.

Hays Placer (Canada Lynx)

This 133.87-acre parcel lies on the west side of the Continental Divide at an average elevation of approximately 11,600 feet. It is located roughly 11 miles southwest of Lake City, Colorado. The historic use of this area has been mining although mining has not occurred here for many years. Some limited timber harvesting has occurred on the Hays Placer, which was probably associated with historic mining activities. The area lies on the toe of a ridge extending toward the northeast from the summit of Bent Peak. The general orientation of the landform is generally toward the north-northeast. The northern portion of the property is part of a relatively large gently sloping wetlands complex,

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which increases in gradient toward the south. The southern two-thirds of the parcel is located on moderately sloping mountainside ranging from 10-50% in gradient.

The northern portion of this parcel is characterized by an open wetlands area dominated by moderately dense stands of willow interspersed with small wet openings. These openings are dominated by sedgegrasses with an association of a variety of other wetland obligate and wet facultative plant species. This area is part of a larger wetland complex that lies between the West Fork and Main Fork of Wager Creek and extends to the north. At the time of field surveys (August 2001) the soil surface was completely saturated through much of this area and surface water was present in some areas. The hydrologic flow in this area appears to be associated with both surface and sub-surface water movement. The wetland area extends to the edge of, and in some cases, into the forested cover to the south. The Main Fork of Wager Creek runs along the eastern edge of the tract flowing generally from south to north. This stream is very variable in width, depending on confinement, but averages approximately 6-8 feet in bankfull width. It also has a variable gradient ranging from moderately steep to gentle. Wetland areas, dominated by willow, border the creek intermittently on its course through and immediately adjacent to the tract. Additionally, the West Fork of Wager Creek dissects the northwestern corner of the property. It is very similar in character to the main fork in terms of size and gradient. It is also lined intermittently with willow-dominated wetlands.

A moderately dense late seral spruce-fir forest cover dominates the southern portion of the tract. Engelmann spruce (*Picea engelmannii*) tends to dominant the canopy over the sub-alpine fir (*Abies lasiocarpa*). The older trees in this area are at least 250 years in age. Levels of coarse woody debris are high to moderately high over much of this area. Standing dead trees are also very prevalent throughout the forest cover. The shrub layer varies from poor to moderately well represented and includes currant (*Ribes sp.*), elderberry (*Sambucus microbotrys*), and Rocky Mountain whortleberry (*Vaccinium myrtillus*). Herbaceous cover is moderately-well represented on the lower slopes decreasing with elevation. Typical forb cover includes heartleaf arnica (*Arnica cordifolia*), arrowleaf groundsel (*Senecio triangularis*), lousewort (*Pedicularis sp.*), bluebells (*Mertensia sp.*), strawberry (*Fragaria virginiana*) and little gentian (*Gentianella acuta*). The very top of the landform on the southern edge of the tract features a 4-5 acre opening covered in coarse scree.

V. SPECIES DESCRIPTION AND PROJECT EFFECTS

BALD EAGLE

(Haliaeetus leucocephalus)

Habitat Conditions within the Federal Lands: Suitable nesting and roosting habitat for the bald eagle is present along Rio Grande Valley and Trout Creek in N2, N4, N5, N6 and L5. With the exception of N6, which has a mature cottonwood component along the bank of Trout Creek, potential nest and roost trees are predominantly blue spruce and Douglas fir. The blue spruce trees in N2 may be marginal for use by the bald eagle due to their stunted form. The cottonwood component found in N6 would probably offer the best opportunities for eagle nesting or roosting activities. However, existing residences on private property adjacent to these areas may have already reduced the overall suitability of this area for either nesting or roosting habitat. The forest edge in N4, N5, and L5 would also provide roosting and nesting habitat, although these areas lie greater than ¼-mile from surface water. Perching opportunities along the river and lower portions of Trout Creek are generally absent.

Habitat Conditions Within the Non-Federal Lands: None

Factors of Concern: A primary concern for potential nesting habitat would be the possible removal of trees suitable for building nests. An additional concern for nesting and roosting habitat would be human disturbance, since bald eagles are exceptionally sensitive around their roosts and nesting sites (Towry 1984).

Direct and Indirect Effects: CDOW records do not indicate active or historical nesting sites in proximity to any of these federal lands. Field surveys also did not identify any signs of current or past nesting activity. There is also no evidence, based on CDOW records, that any of the federal lands are used as winter concentration roosting areas. Therefore, any use by this species in proximity to the federal lands is probably casual use as foraging habitat and would be utilized primarily during the winter months. Additional human presence in any of these areas would degrade the overall quality of the habitat for bald eagle. Eagles may hunt over the Rio Grande and Trout Creek but perching opportunities adjacent to the river are sparse to absent except in N6. Covenants will prohibit commercial removal of forest cover and development activity in floodplains and wetland habitats. Although individuals might experience some disruption in diurnal activities if human activity were to increase on these lands, it is unlikely that this proposal would result in a species shift in the overall use patterns within the general area or otherwise affect individuals utilizing this portion of the river corridor.

Cumulative Effects: Due to the general absence of current and historical nesting and winter roosting activity it is unlikely that implementation of this proposal would result in cumulative effects to the bald eagle.

Determination: It is determined that this proposal may affect but is unlikely to adversely affect the bald eagle.

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Summary of Rationale For This Determination:

- CDOW records do not indicate active or historical nesting sites in proximity to any of these federal lands.
- Field surveys also did not identify any signs of current or past nesting activity.
- There is no evidence, based on CDOW records, that any of the federal lands are used as winter concentration roosting areas.
- It is unlikely that this proposal would result in a species shift in the overall use patterns within the general area or otherwise affect individuals utilizing this portion of the river corridor.

CANADA LYNX

(Felix Lynx canadensis)

Habitat Conditions within the Federal Lands: Lynx habitat as defined by the recent analysis of lynx habitat on the Rio Grande National Forest falls into one of five habitat categories:

Denning Habitat-Provides structural components for denning, as well as summer and winter foraging habitat, and transitional habitat between other habitat patches

Winter Foraging Habitat-Provides the structural characteristics for habitat for favored winter and summer prey species but lacks the structural components necessary for denning

Other Habitat-Provides summer foraging habitat, as well as transitional habitat to other suitable habitat patches.

Currently Unsuitable Habitat-This habitat is currently structurally unsuited to provide the life requisites for lynx but may develop these attributes over time

Non-habitat-Has none of the attributes for providing suitable lynx habitat currently and no potential for developing these attributes over time

The Rio Grande National Forest's lynx analysis identified suitable lynx habitat in N4, N5, N6 and L5. All of these areas lie within the 102,352-acre Hogback Lynx Analysis Unit (LAU). The following is an acreage breakdown of the habitat characteristics within this LAU: The portion of the habitat component occurring on Forest Service land is shown in parenthesis.

Denning Total	34,896	(34,046, 98%)	
Winter Foraging	9,400	(8,730, 93%)	
Other Habitat	<u>21,418</u>	<u>(21,043, 98%)</u>	
Total Suitable Habitat			65,714 (63,819, 97%)
Currently Unsuitable			3,743 (3,743, 100%)
Non-habitat			<u>32,893</u> (24,410, 74%)
LAU Total Acres			102,350 (91,972, 90%)
% LAU Currently Unsuitable			3.7%

Exhibit 4A
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The following is an acreage breakdown of the lynx habitat within the Federal parcels:

Parcel	Denning	Winter Foraging	Other Habitat	Currently Unsuitable	Non-Habitat
N4	58				29
N5		1			
N6	5	3			4
L5	104	33	18	7	32
Total	167	37	18	7	65
Grand Total of Suitable Habitat (denning, winter and other foraging habitat) Within the Federal Tracts – 222 Acres					

Factors of Concern: Significant reductions in forest cover can have a negative impact on the suitability of lynx habitat by reducing overhead cover needed for traveling, reducing the amount and spatial arrangement of late-successional stands needed for denning, and removal of downed woody debris needed for denning and thermal cover. Development such as buildings, roads and other human disturbance can also have a negative impact by disrupting travel and hunting patterns, and destroying habitat for prey (Koehler and Britnell 1990).

Direct and Indirect Effects (Federal Lands): The lynx habitat found on the federal lands represents approximately 0.34% (222 acres out of a total of 65,714 acres) of the total suitable habitat and 0.46% of the foraging habitat found within the Hogback LAU. Additionally, with the exception of habitat found along the lower slopes of L5, this habitat would be protected from disturbance after conveyance to private ownership through covenants that would preclude activities such as development and timber harvesting in areas classified as lynx habitat. The likelihood that potential habitat disruptive activities such as timber harvesting or residential development could occur is further limited by site conditions. Much of the suitable habitat occurs on steep slopes (> 35%) that would generally be considered unsuitable for these activities. There are limited opportunities for development in L5, primarily on the lower slopes directly adjacent to the existing private lands on Rio Oxbow Ranch. These developable areas generally lie in open meadow or at the edge of the forest cover. Much of the forest cover in L5 is located on steeper slopes unsuited for development. Steep slopes with localized cliff and outcrop features would also make timber harvesting within most of this tract unlikely, as well, even without covenants.

The owner of the Rio Oxbow ranch, one of the Non-Federal Parties in this exchange, has indicated that he intends to develop up to five residential sites on the ranch. To minimize the overall visual effects of that development he would place structures near the base of the slopes encompassing the southwest edge of the ranch and the L5 parcel. The tree cover found at the interface of the forested slopes and the open meadowlands would serve as screening for these structures. Although the owner has not yet determined the ultimate location of these sites, it is anticipated that up to three of the sites would completely or

Exhibit 4A
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partially be placed in areas currently designated as suitable lynx habitat. The chosen sites may occur within the existing ranch boundaries or on the L5 parcel. It is estimated that each development site would result in up to one acre of surface disturbance for structures and access roads. Therefore, this development would result in the loss of up to 3 acres of suitable denning or winter foraging lynx habitat. The remainder of the suitable habitat would be protected through deed restrictions. These 3 acres would represent a total loss of 0.0047% of the current suitable habitat and 0.0068% of the total foraging habitat within the Hogback LAU. Due to the location of the potential development sites at the edge of forested cover and a large expanse of open non-habitat, it is unlikely that disturbance occurring in this area would result in significantly fragment suitable habitat within the immediate area, cause significant disruption in movement patterns between adjacent suitable habitats, or interfere with linkage corridors to other suitable habitats within the landscape. Therefore, the primary direct and indirect effects would be limited to the loss of 3 acres of potential foraging habitat.

Cumulative Effects: There are no current or proposed Forest Service projects within the Hogback LAU. Current and planned Forest Service activity is generally limited to basic maintenance projects (i.e. roads, trails and bridges) and to evaluating future road closures. A significant portion of the LAU lies within designated wilderness or inventoried roadless areas and would not be subject to any major disturbances to suitable lynx habitat under existing Forest direction.

A very small portion (<3.0%) of the total suitable habitat and 3.5% of the total foraging habitat within the LAU occurs on private lands. Since the Forest Service has no jurisdictional control over these areas, this habitat could be subject to disturbances that could reduce their suitability for lynx. However, at this time there are no known proposals for habitat disruptive activities within these areas. Based on current land use patterns it is unlikely that, even if site disruptive activities, such as development or timber harvesting, were to occur on the private ownerships, only a small portion of this area would actually be affected. The majority of the suitable habitat on private lands occurs in remote areas that have poor and difficult access and lie, at least partially, on rugged, steep terrain. These factors would limit the overall potential for complete habitat disruption on this 3-4% of suitable habitat within the LAU.

Approximately 3,743 acres of currently unsuitable and 21,418 acres of other lynx habitat has been identified within the Hogback LAU. It is anticipated that over time a significant portion of these areas will either develop components consistent with lynx habitat or improve in their current ability to provide foraging and other lynx requisite habitat conditions. This would tend to offset the overall long-term effects of the 3 acres of habitat that would be lost through implementation of this proposal or other habitat losses that may occur within the LAU.

Habitat Conditions within the Non-federal Lands: Suitable lynx habitat has been identified on the Hays Placer, part of the Carson properties and on B4 in the Bonafacio properties. The Hays Placer lies within the 11,850-acre Slumgullion South LAU (GMUG

Exhibit 4A
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National Forest). The following is an acreage breakdown of the habitat characteristics within this LAU:

Denning Habitat	3,050
Winter Foraging	1,517
Other Habitat (summer foraging)	<u>2,219</u>
Total Suitable Habitat	6,786
Currently Unsuitable Habitat	0
Non-habitat	<u>5,064</u>
LAU Total	11,850 Acres

Much of the southern 2/3 of the Hays Placer (approximately 109 acres) is classified as denning habitat. The late-seral spruce-fir forest cover has a high level of canopy closure with medium to high levels of coarse woody debris. The adjacent wetland/willow complex (approximately 15 acres) in the northern portion of this parcel is classified as other winter foraging and other lynx habitat.

The B4 parcel lies within the 94,931-acre Pinos Rock LAU. Approximately 50 acres of winter foraging habitat has been identified within this parcel. The following is an acreage breakdown of the lynx habitat within the Pine Rock LAU.

Denning Habitat	19,450
Winter Foraging	9,922
Other Habitat (summer foraging)	<u>24,270</u>
Total Suitable Habitat	60,428
Currently Unsuitable Habitat	5,713
Non-habitat	<u>35,574</u>
LAU Total	101,715 Acres

The suitable lynx habitat found in Hays Placer tract represents approximately 1.8% (124 acres of 6,786 acres) of suitable habitat found within this LAU. The suitable habitat found in the B4 parcel represents 0.001% of the suitable habitat found within this LAU. This habitat would move to Federal ownership as a result of this proposal and would be managed under the Forest Plan guidelines pertaining to this species. It would, therefore, gain a greater degree of protection than currently exist. Total potential losses of suitable habitat to the Canada lynx on the federal lands would be offset, to a degree, by the increased administrative protection resulting through this exchange.

Approximately 222 acres of suitable denning and foraging lynx habitat would move from public to private ownership as a result of this proposal. However, the majority of this habitat would be protected in perpetuity by covenants that would limit the potential for disturbance that could occur in this habitat. Approximately 174 acres of suitable habitat would move from private to Federal ownership.

Determination: It is determined that the implementation of this proposal may affect but is not likely to adversely affect the Canada lynx.

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Summary of Rationale For This Determination

- The proportion of the of the suitable lynx habitat and foraging habitat found within the Federal tracts proposed for exchange represent a very small proportion of the LAU totals for these components (0.34% and 0.46%, respectively).
- With the exception of approximately 3 acres in the L5 parcel, suitable lynx habitat would be protected from future habitat disruptive activities by covenants that would go into effect at the time of conveyance. (See Project Description)
- The 3 acres of suitable lynx habitat that may potentially be lost through development represents a small portion of the total lynx habitat and the total foraging habitat within the LAUs, 0.0047% and 0.0068%, respectively.
- The location of this 3 acres at the interface between lynx habitat and a large expanse of open non-habitat minimizes the risks of fragmentation and reduces the likelihood of disruptions to lynx linkage corridors or overall movement patterns within and adjacent to the affected lands. The land exchange proposal is not located within an identified lynx linkage corridor.
- The small amount of suitable lynx habitat on private lands represents a very small portion (3%) of the total suitable habitat within the LAU. This reduces the potential for significant cumulative future losses of habitat through habitat disruption on these lands.
- Currently unsuitable habitat will develop suitable habitat characteristics, over time, which will offset potential habitat losses that may occur on private lands.
- Approximately 174 acres of suitable lynx habitat will move to public ownership through the conveyance of the non-federal lands in the Hays Placer and B4 tracts, further offsetting potential adverse effects to overall lynx habitat within the region.

Over time some of the habitat currently classified as “currently unsuitable” will develop suitable habitat attributes and “other habitat” will improve to provide both winter and summer foraging opportunities for lynx.