Harris Ranch Wildlife Impact Assessment and Management Plan

Revision 02
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Prepared For:
Harris Ranch Limited Partnership

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and

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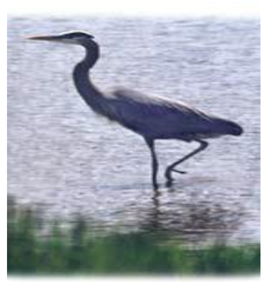

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Dr. Timothy D. (Tim) Reynolds is President and owner of TREC, Inc., a consulting firm in Rigby, Idaho specializing in environmental services and ecological research. He received his Ph.D. in Zoology (Ecology emphasis) from Idaho State University in 1978 and his M.S. (Biology) and B.S. (Biology, Comprehensive) from Illinois State University in 1974 and 1972, respectively. During his career he has been a Visiting Professor of Biology at Boise State University, Radioecologist and Environmental Branch Chief for the U.S. Department of Energy, and a Research Ecologist and Director of Operations for the Environmental Science and Research Foundation. He has conducted and coordinated ecological research on birds, mammals, reptiles, and the influence of ecological processes on hazardous waste management. He has 50 publications in the technical literature, plus peer-reviewed web-published conservation assessments of several threatened and endangered species and species of special concern.

ACKNOWLEDGEMENTS

The process of writing this wildlife plan could not have been accomplished without the cooperative efforts of a number of people who live and work in Idaho. These include: Rich Howard, TREC Inc; Aaron English and Charlie Baun, URS Corporation; Eric Leitzinger, Edward Bottum, John Rachael, and Mary Dudley, Idaho Department of Fish and Game; Matt McCoy, Audubon Society; Steve Sweet, Quadrant Consulting; Don Belts, JensenBelts Associates; John Caywood, Land Trust Treasure Valley; Bob Narus, Bureau of Land Management; Dick Miller, Association Management, Inc.; Doug Fowler and Sarah Martz, LeNir Ltd.; David Koga, The Land Group; as well as Larry Eno and Pete White of Boise, Idaho.

Special thanks are given to the creators of the Wood Duck Island *Homeowner's Wildlife Manual*; a cooperative project between the Wood Duck Island Homeowner's Association and the Idaho Department of Fish and Game's Non-game Program. This document serves as a great instrument to educate community residents regarding local wildlife and vegetation, as well as their personal role in conserving scenic beauty, wildlife resources, and sensitive plant communities.

EXECUTIVE SUMMARY

This document presents the wildlife assessment and mitigation plan for the Harris Ranch Planned Community in six sections. Section 1.0 describes the diverse background of Barber valley, the history of the Harris Family, and the broad goals for creating a wildlife

management plan for the proposed Harris Ranch planned community. Section 2.0 describes the local ecology of the proposed project area and surrounding areas, and provides a detailed account of Idaho Department of Fish and Game (IDFG) identified special status wildlife species that have a special relationship to the region. Section 3.0 identifies the impacts to wildlife and habitat that are anticipated to result from the proposed project. Section 4.0 describes specific and general actions that will be or have already been taken by the Harris Ranch Neighborhood Development in an effort to minimize impacts to wildlife. The Section also includes some of the general tools and approaches that will be used to restore wildlife habitat at Harris Ranch. In addition, a funding mechanism for on- and off-site habitat enhancement and mitigation is presented. Section 5.0 is a phased habitat restoration plan that indicates materials, timelines, and costs. Section 6.0 describes some voluntary actions taken by the developer for conservation of wildlife habitat on and near the project area. Section 7.0 provides a summary of mitigation actions.

There will be some unavoidable adverse impacts to wildlife and habitat associated with the proposed project. Avoidance of sensitive areas and minimization of activities that threaten habitat values in certain areas will reduce those effects. Meanwhile, mitigation efforts that include habitat improvement projects and conservation easements will improve wildlife habitat values in certain areas that remain in a natural open condition over the long-term. Harris Ranch is committed to performing the mitigation defined in this document have been accepted, as well as the voluntary conservation actions mentioned in Section 6.0.

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1.0 INTRODUCTION

The proposed development at Harris Ranch (HR) has taken a proactive approach to addressing impacts to resident and migrating wildlife present, or in the vicinity of the proposed project area (Figure 2). It has been acknowledged upfront that the development of a planned community at Harris Ranch will have certain unavoidable impacts to wildlife. The goal of this document is to identify impacts and develop a framework to avoid, minimize, or mitigate potential adverse impacts in areas where it is ecologically responsible and financially reasonable, and to concomitantly foster an environmentally responsible community ethic. Each of the development phases (Figure 4) for Harris Ranch is guided by the avoid, minimize, and mitigate concept:

Avoid Identify critical habitat types and avoid development or habitat alteration in those areas. Create restrictions that would limit actions within those areas.

Minimize Identify actions that potentially threaten the ongoing presence or success of a particular species, or wildlife biodiversity in general, and reduce those actions to an acceptable level.

Mitigate Define potential actions that could be taken to enhance or create wildlife habitat in an effort to alleviate habitat loss or alteration in other areas.

Perhaps the most important aspect regarding this planning process was ongoing coordination with the Idaho Department of Fish and Game (IDFG) and other interested agencies, groups, or private entities. At various stages throughout the plan development process, meetings were conducted with these entities to determine opinions, concerns, suggestions, and recommendations regarding wildlife and the plan. The direction of the plan was navigated by this cooperative approach in an effort to identify and create recommendations that could have the highest level of potential benefits to wildlife at Harris Ranch.

1.1 BRIEF HISTORY OF THE HARRIS FAMILY AT BARBER VALLEY

This reflection of the Harris Family history and Barber Valley was graciously provided by Larry Eno of Boise, Idaho. Larry worked with Dallas Harris for an amazing 57 years! The following bullets outline an interview conducted with Larry in December 2005 at Ben's Crow Inn. A detailed history can be found in Appendix A.

- Native American activity was historically a common occurrence at Warm Springs Creek, according to Dallas Harris. It was said that a Native American Chief would annually make camp on the hilltops adjacent to the geothermal pools at the mouth of Warm Springs Creek.
- Early 1900s — Kelly Hot Springs Hotel operated at the mouth of the Warm Springs Creek.
- 1920 – 1930s — The town of Barber was home to a small population.
- 1948 — Power-line constructed between Barber Valley and Hell's Canyon.
- 1950 – 1951 — Harris Brothers Lumber moves to Barber Valley from Idaho City. Two fires at the Idaho City sawmill persuade the Harris Family to move to Barber Valley.
- Mid 1950s — Lucky Peak Dam is constructed.
- 1960s — Harris Family sells 2,100 acres to the State of Idaho to supplement the Boise River Wildlife Management Area.
- 1961 — Harris Brothers Lumber is sold to Boise Cascade. Dallas Harris begins investing in local property around the Boise Valley.
- 1966 or 1967 — Producers Lumber is created by Dallas Harris.
- 1980s – 1990s — Harris Family continually increasing the size of the ranching operation. The ranch was a very integral part of Dallas' life and provided an important outlet for him. He was a great steward of the land regarding ranching. He never allowed the killing of a coyote or other predators on his property.
- Early 1990s — Producers Lumbers closed. Sawmill removed and machinery auctioned.

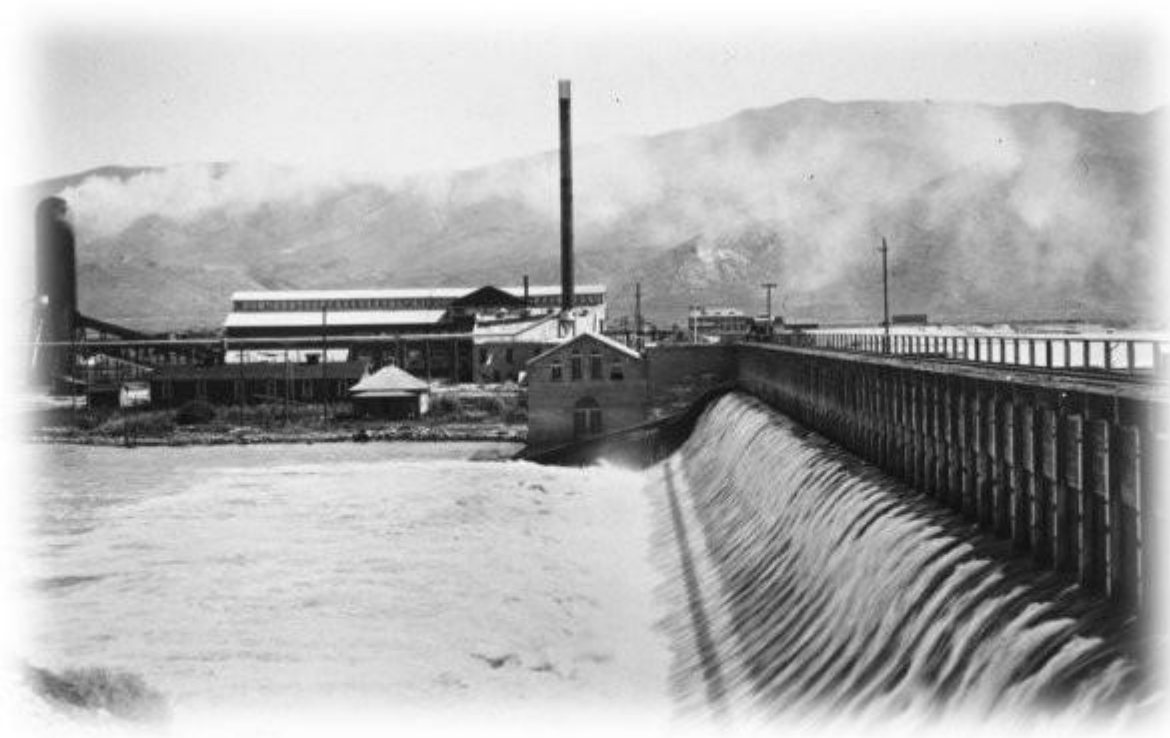

Figure 1. Historic Photos.
Above – Picture of Barber Dam and Lumber Mill – early 1900s.
Right – Picture of Barber Pool – early 1900s (Idaho Foundation for Parks and Lands 2005)

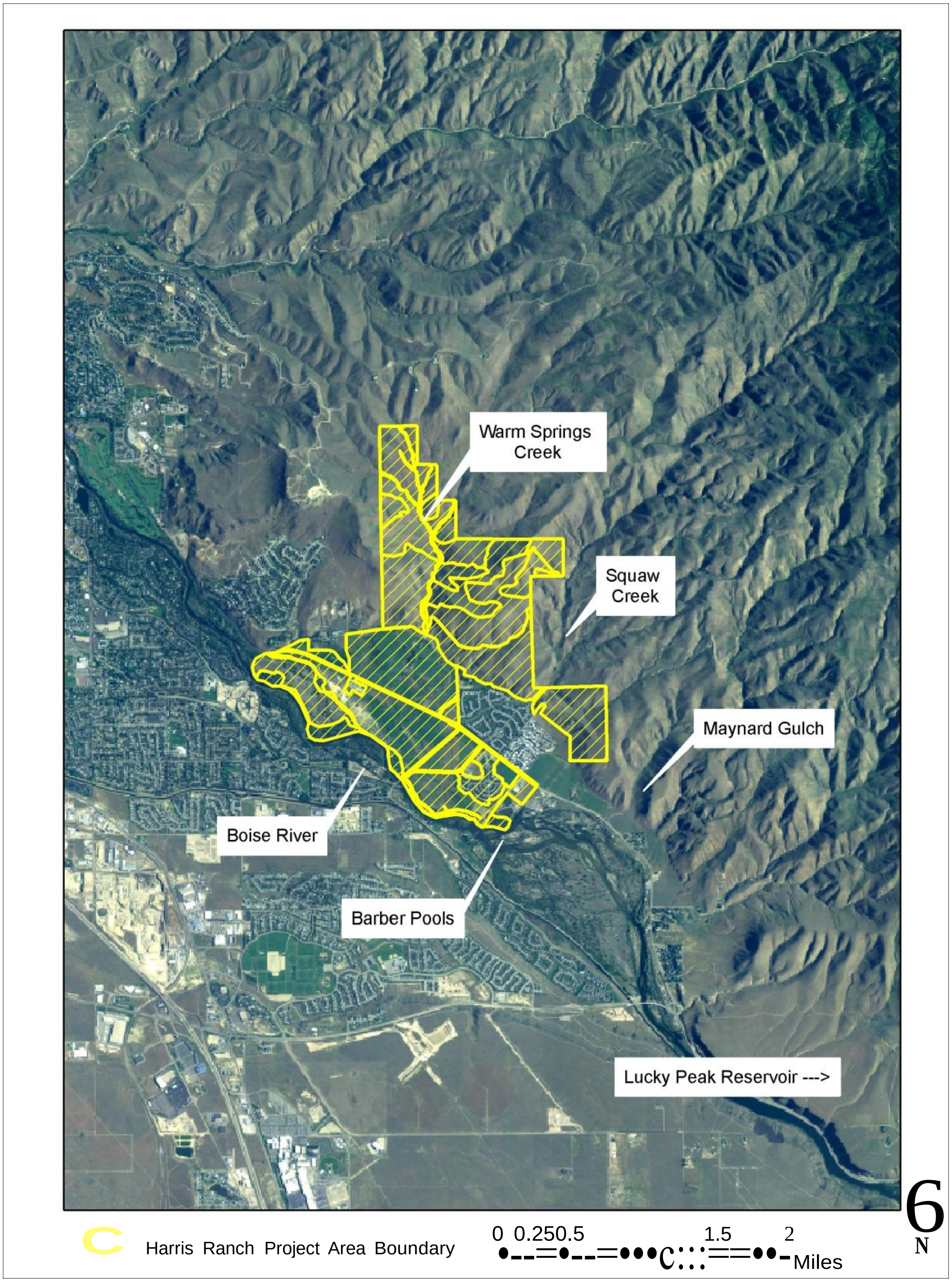

Figure 2. Harris Ranch Project Area Boundary Map.

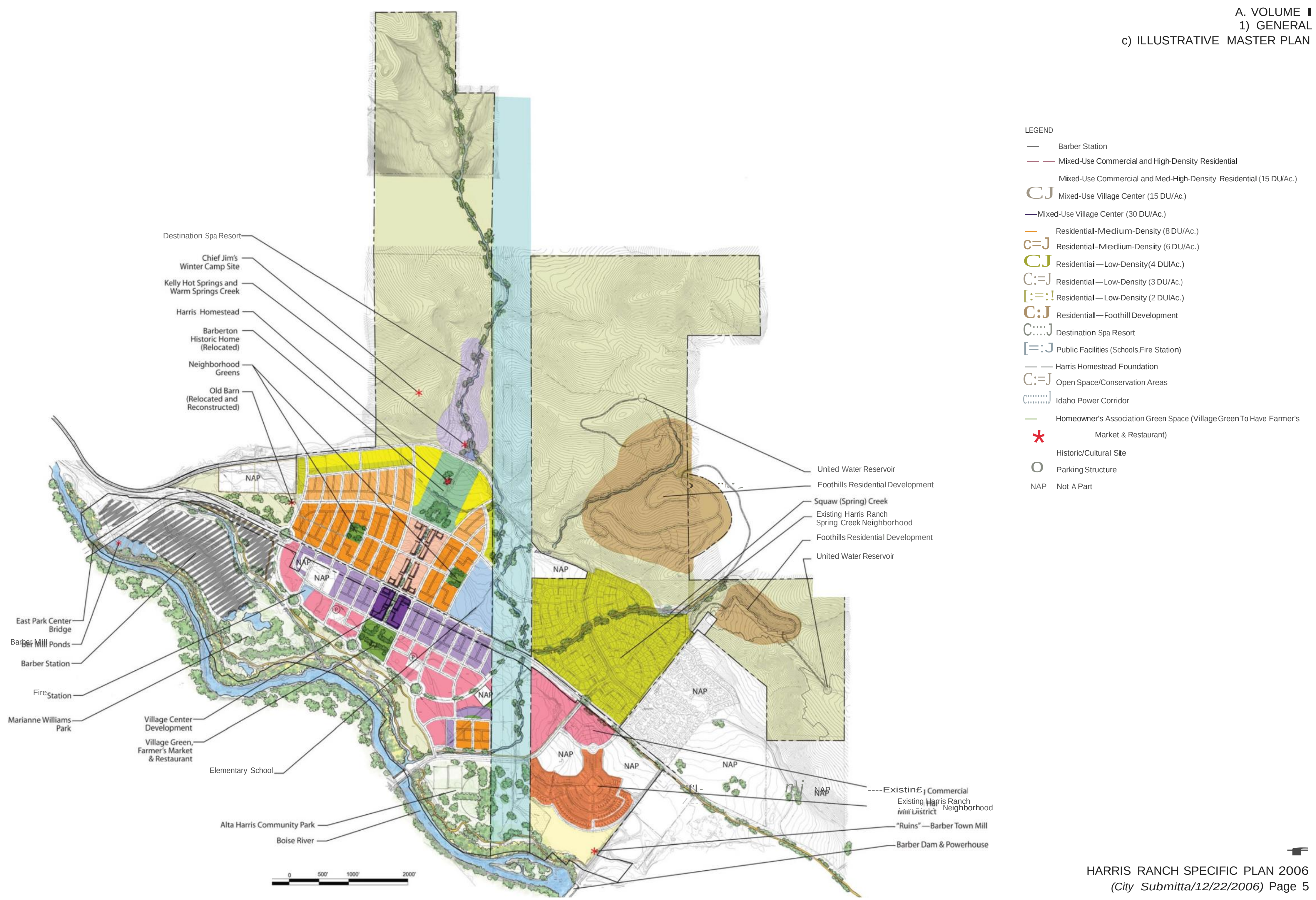

Figure 3. Harris Ranch Master **Plan.**

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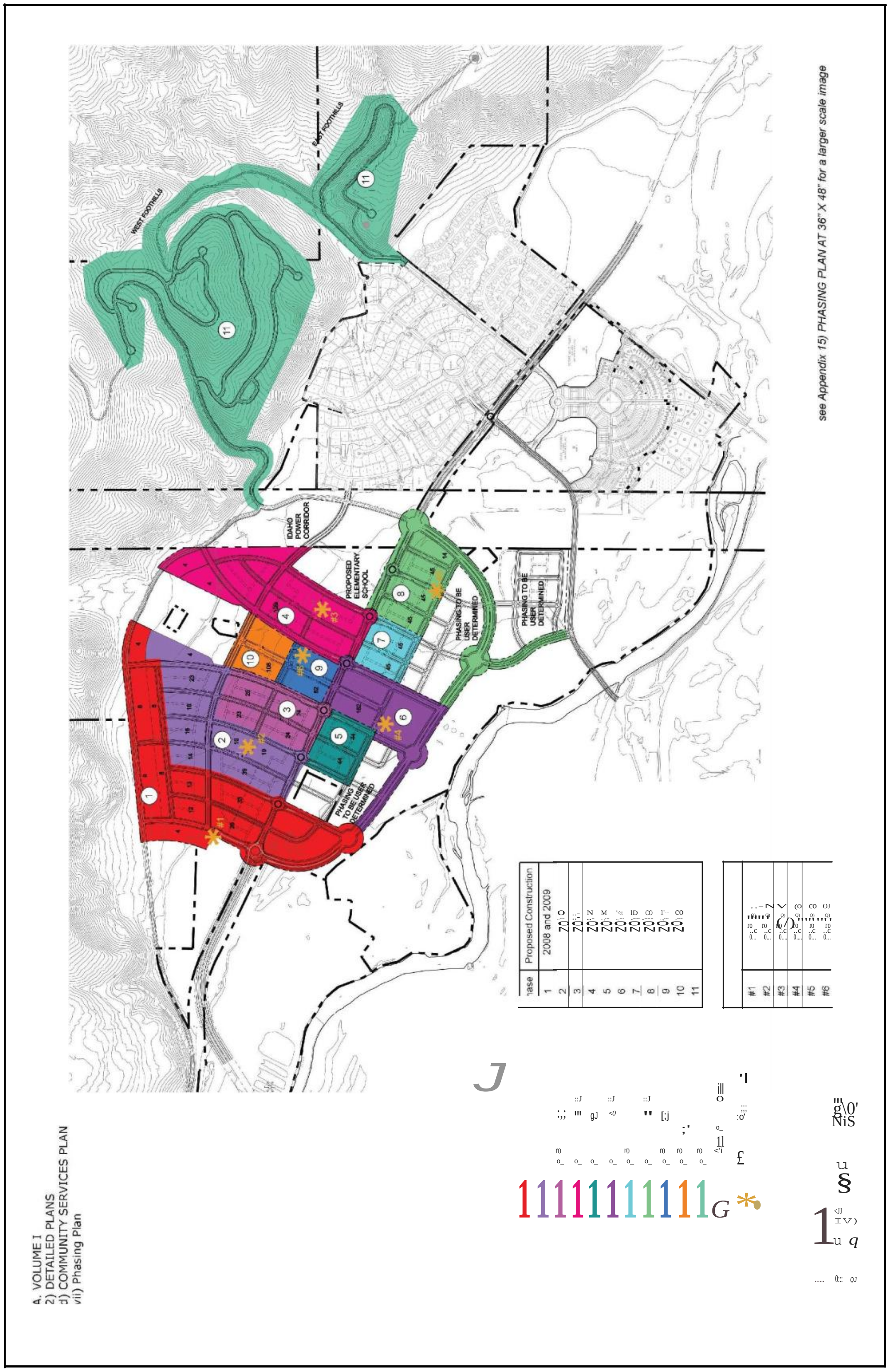

Figure 4. Harris Ranch Development Phasing Plan.

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2.0 LOCAL ECOLOGY

The goal of this section is to describe the general ecological characteristics of the proposed HR development area and its relationship to adjacent land, including the Boise River Wildlife Management Area (BRWMA). A general panoramic overview will describe the immediate vicinity surrounding HR. The current condition of the HR Foothills and valley bottom floodplain vegetation and habitat types will be described, including probable reasons for its degraded state. Also included is a habitat description of the adjacent BRWMA. Lastly, the primary wildlife species of concern, as well as their association and use of the proposed HR development area will be described in detail.

2.1 LOCAL VICINITY AND HARRIS RANCH

The climate of Ada County and the HR property is characterized by sharp contrasts between summer and winter seasons. The average annual temperature recorded at the Boise Airport is 51.9 degree Fahrenheit (F) (Western Regional Climate Center 2005). The winters, though cold, are generally not too severe. The average annual precipitation recorded at the Boise Airport weather station from 1940 – 2005 is 11.54 in. (NOAA 2005).

Urban habitat types surrounding HR are generally low elevation residential developments along the river, valleys, and Foothills. Urban areas are highly manipulated, human-dominated, habitat type with relatively few wildlife values. HR is generally bordered by the following land use:

North and East	The area north and east of HR increases in elevation through the Boise Foothills, Warm Springs Mesa, Table Rock, the western boundary of the BRWMA, and Lucky Peak Reservoir. This historically open and contiguous wildlife habitat area has been fragmented by scattered housing, roads, recreational trails, fire, and invasive and noxious plant species. The existing wildlife habitat quality across the lower elevation Foothills of the Boise Front varies greatly, but is generally in fair to poor condition; however, there some small isolated areas that are still in good condition.

South: The area south of HR (Figure 5), across the Boise River is represented by dense urban neighborhoods, providing limited habitat and habitat enhancement opportunities for local wildlife. Further south, residential areas transition into commercial and industrial areas towards Interstate I-84, provide limited wildlife habitat and enhancement opportunities.

West: Areas west of HR are characterized by a mix of residential and commercial properties.

2.2 VEGETATION

The following sections will describe the current habitat conditions of the foothills, riparian communities, valley bottom and pastures located at Harris Ranch and the surrounding vicinity.

Habitat Condition

Several habitat condition schemes are commonly used to qualitatively define habitat quality. The one below uses the pristine condition as a reference against which habitat condition compared. Habitat degradation can then be described as a degree of departure from a potential natural plant community. Potential natural plant communities (i.e., reference conditions) are based on the ecological site descriptions identified by the United States Department of Agriculture, Natural Resource Conservation Service (NRCS). The ecological site descriptions composed by the NRCS indicate a potential natural plant community for discrete areas within Harris Ranch.

Poor Condition: Canopy cover dominated by non-native invasive annual grass and forbs species, little or no remaining natural vegetation. Has extreme or moderate to extreme departure from reference condition, taking into consideration state and transition characteristics.

Marginal Condition: Canopy cover co-dominated by native and non-native species. Has moderate to extreme (on the moderate side), moderate, or slight to moderate (on the moderate side) departure from reference condition, taking into consideration state and transition characteristics.

Satisfactory Condition: Canopy cover dominated by native species, with sub-dominant population of non-native invasive annual grass and forbs. Has slight to moderate (on the slight side) or slight departure from reference condition, taking into consideration state and transition characteristics.

Good Condition: Canopy cover dominated by native species, with only limited occurrences of non-native invasive annual grass and forbs. Has slight to none departure from reference condition, taking into consideration state and transition characteristics.

Pristine Condition: No noticeable invasive species present. Site within normal range of variability based on historic conditions, i.e. reference condition.

A more quantitative scheme was adapted by the Idaho Department of Fish and Game Conservation Data Center for use by The Nature Conservancy (TNC; adapted from Johnson and Simon 1987 by Rust *et al*, 2001). This habitat classification also has five conditions, which closely parallel, but in reverse order, those identified above.

TNC ECOLOGICAL CONDITION CLASSIFICATION

A. Pristine condition. Evidence of post-industrial human-caused disturbance is absent. Exotic species are absent.
B. Little evidence of post-industrial human-caused disturbance is present. Stand composition and structure is predominately natural. Exotic species are uncommon (< 1 % cover).
C. Post-industrial human-caused disturbance is apparent. Stand composition structure is altered. Exotic species are well represented to abundant (5-25% cover).
D. Evidence of post-industrial human-caused disturbance is prevalent. Stand composition and structure is altered. Native species are present, but in peril of

loss. Increasers dominate the stand. Invader species are a significant compositional component.

E. Native stand composition, structure, and function are significantly altered. Re-establishment of native stand composition, structure and function will require large energy inputs.

Because the TNC classifications have a quantitative, and consequently measurable, basis for the three best categories, we have selected this scheme to identify habitat enhancement targets. However, because neither the Harris Ranch lands nor the adjoining BRWMA habitats have had a thorough and complete habitat analysis, present habitat conditions are described with the more qualitative scheme. For the purpose of this plan, we connect these two schemes with the following correlations:

- Poor Condition = TNC Code E
- Marginal Condition = TNC Code D
- Satisfactory Condition = TNC Code C
- Good Condition = TNC Code B
- Pristine = TNC Code A.

Table 1 quantifies the amount and percent of each community type found within the proposed Project Area, based on the condition of the habitat. Community boundaries and vegetation condition were identified with aerial photography and an onsite ground survey, then digitally mapped (Figure 5) using the classifications identified below. Based on general habitat characteristics and overall condition, the vegetation communities were grouped into three categories, agricultural, upland, and riparian communities. Upland communities consist of shrub and grasslands, and agricultural includes disturbed areas

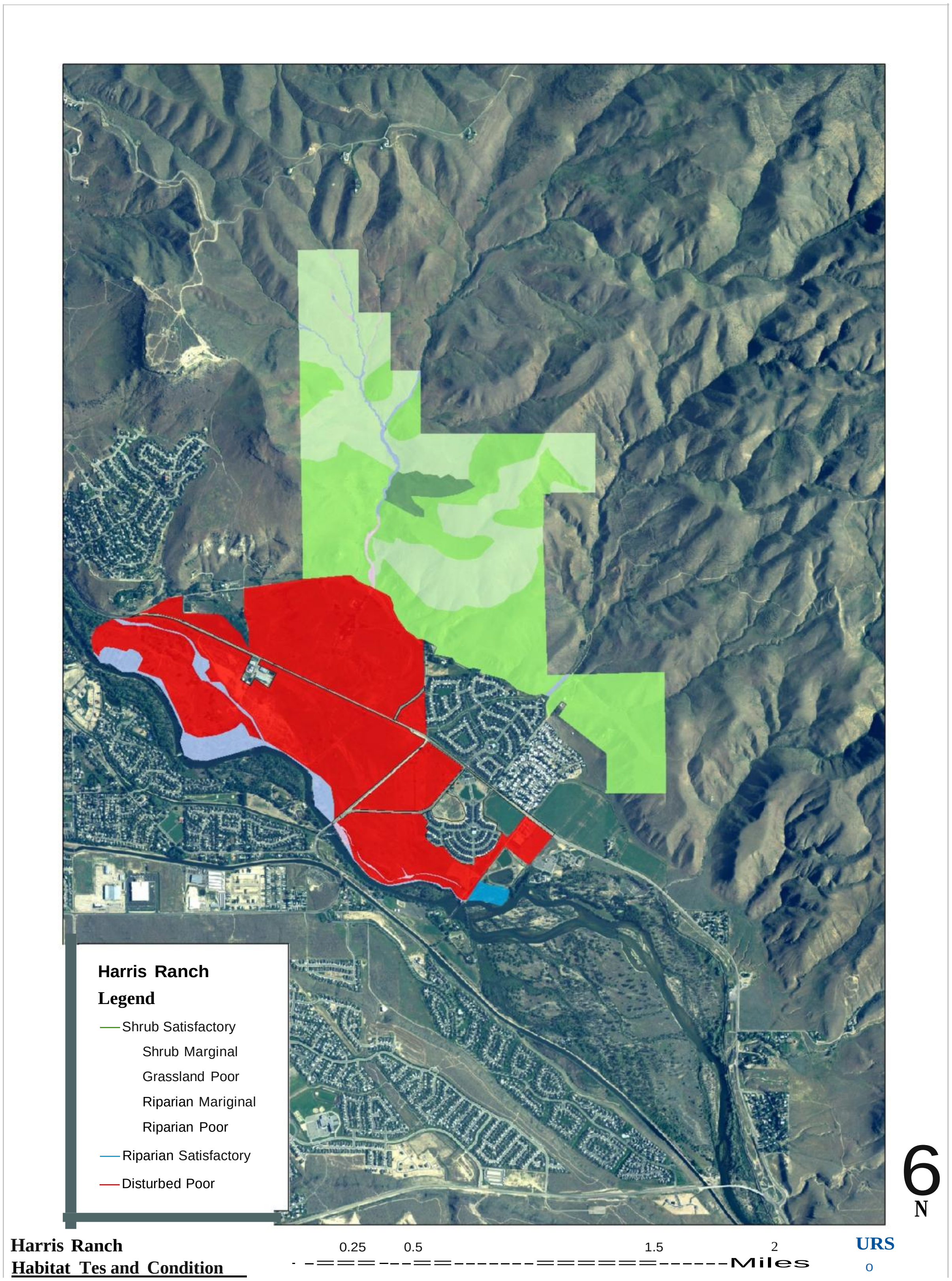

Figure 5. Harris Ranch Habitat Types and Condition Map.

Table 1. Vegetative Communities at the Proposed Project Area.

Community	Quality Class	No. Acres	% of Total
Agricultural/ Historic Commercial	Poor	617.21	38.2
Grassland	Poor	354.57	19.6
Shrub	Marginal	541.89	35.7
Shrub	Satisfactory	23.58	2.1
Riparian	Poor	7.56	0.5
Riparian	Marginal	61.74	3.4
Riparian	Satisfactory	7.23	0.4
Total		**1,613.78**	**100**

2.2.1 Foothills


Skeletonweed

The ecological condition in the foothills across the entire Boise front ranges from poor to excellent (BP&R 2000). Generally, on the lower slopes of the foothills, much of the native vegetation has been depleted from heavy grazing that occurred primarily in the late 1800s and early 1900s, and more recently by frequent fires. Annual exotic grasses and other weeds have replaced much of the native vegetation. Ada County Weed and Pest Control (ACWPC) reports that infestations of noxious weeds in the foothills include rush skeletonweed (*Chondrilla juncea*), whitetop (*Cardaria draba)*, Canada thistle (*Cirsium arvense*), Scotch thistle (*Onopordum acanthium*), field bindweed (*Convolvulus arvensis)*, punctervine (*Tribulus terrestris)*, poison hemlock (*Conium maculatum*), and purple loosestrife (*Lythrum salicaria*). Of these, rush skeletonweed is contributing the most considerable damage to the Foothills ecosystem (BP&R 2000).

Grassland and upland shrub communities are found on the lower and mid-elevation foothill slopes. Grassland and upland shrub communities are defined by the Public Lands Open Space Management Plan for the Boise Foothills (2000) as:

Grasslands

*Grasslands are a dominant plant community on the lower elevation slopes composed of lacustrine, or lakebed, soils. Grazing and fire on the lower slopes has eliminated much of the former native shrub and grass vegetation and left dense stands of annual grasses. These annual grasses include cheatgrass (*Bromus techorum*) on sandy soils and medusahead (*Taeniatherum caput-medusae*) on soils with higher clay content. Other exotics and state-listed noxious weeds have also impacted the grasslands. The most significant noxious forb is likely rush skeletonweed. Remnants of native vegetation remain in some lower Foothills areas such as Hulls Gulch/Camel's Back Reserve and Military Reserve where upland shrub and grass communities include bitterbrush (*Purshia tridetata*), sagebrush (*Artemisia spp.*), and rabbitbrush (*Chrysothamnus spp.*) as the primary shrub species. Perennial grasses include threeawn (*Aristida longiseta*), Sandberg's bluegrass (*Poa sandbergii*), and bluebunch wheatgrass (*Agropyron spicatum*) (EDAW, CH2M Hill, Jensen-Belts Associates, 1996).*

Upland Shrub Communities

*The sagebrush and bitterbrush upland shrub communities are prevalent on mid-elevation granitic soils. Historic grazing and fires have altered the native composition of these communities. Thus, the existing shrub communities are represented in a patchwork of remnant native shrub communities. Herb compositions of these shrub communities range from native to exotic species. Upland shrub populations on the northeast aspects appear to be more resilient to burns and weed invasions (Mancuso 1999). The Interagency Fire Rehabilitation Report (1996) identified shrub communities in good to excellent condition that included big sagebrush/bluebunch wheatgrass–Thurber's needlegrass (*Stipa thurberiana*) on many south aspects and bitterbrush/bluebunch wheatgrass on shallow, rocky areas with south aspects. North aspects supported a big sagebrush/Idaho fescue (*Festuca idahoensis*) community type. Vegetation determined to be in poor to fair condition was characterized by increased coverage of threeawn grass, Sandberg's bluegrass, and rabbitbrush.*

The foothills located on the HR property, as well as much of the lower elevation reaches of the BRWMA, are in fair to poor vegetative condition (IDFG 2005d). Remnant perennial grass, shrub, and forb species are present on the HR Foothills in scattered amounts. The north facing slopes have the best condition shrub communities, while the south-, east-, and west-facing slopes have only scattered patches of good condition shrub habitat. Invasive annual grasses and weed infestations are primarily responsible for this degraded state.

Communities of medusahead wildrye, cheatgrass, and rush skeletonweed dominate the foothills at HR, out-competing and replacing native perennial plant species. In some areas, annual grasses existing near mono-culture reduce biodiversity and provide low quality wildlife habitat. Disturbance factors such as roads, farming, poorly managed grazing, logging, urban development, natural erosion, recreation and wildfire, have likely contributed to the explosion of invasive species currently dominating the foothills at HR. Wildfire removes the existing native vegetation and provides an opportunity for invasive species to take hold. In addition, the exotic grasses, medusahead and cheatgrass, have had a profound effect on the Foothills systems by altering the fire cycle (Pyke 1999). Livestock disturb the soil surface with their hoof action and also by removing foliage, giving invasive species a foothold to establish and out-compete native species.

Medusahead

Rush Skeleton Weed

Cheatgrass

Medusahead Seeds

Rush Skeleton Weed Flower

Cheatgrass Seeds

Figure 6. Views of the Harris Ranch Foothills at Warm Springs Creek looking north and northeast. **Top:** Warm Springs Creek looking north. **Bottom:** Examples of limited shrub cover and annual grass/forb domination.

2.2.2 Riparian Communities

The riparian community along the Boise River is classified as "palustrine, forested, broad leaf deciduous wetland", or simply, "forested wetland". The vegetation community is dominated by black cottonwood, various willows, and shrubs such as wild rose, currant, and black hawthorn (Resource Systems 2006). Prior to the upriver dams and diversions, this area was frequently flooded. During the spring, higher flows can inundate much of this zone. Refer to the Bald Eagle Impact Assessment and Management Plan (Howard 2006) for a detailed description of the area, and for recommendations for mitigation.

Warm Springs Creek, Squaw Creek, Maynard Creek (Figure 7), and other small drainages located in the foothills at Harris Ranch have limited seasonal flows and limited riparian habitat, which is dominated by willows, with scattered amounts of currant, rose, black cottonwood, sedge and rush species. Riparian areas represent the largest variety of plant and animal species. Many species rely on the cover of trees and shrubs for nesting, forage, and escape. Riparian and drainage areas are also used as movement and migration corridors for some wildlife species. Invasive plant species encroachment into local riparian areas is common at Harris Ranch and across the Boise Front.

2.2.3 Pastures

The majority of the lower elevation, low slope (relatively flat) habitat associated with the Boise River floodplain at HR (other than directly adjacent to the Boise River) consists of seeded pastures or non-native herbaceous habitat types, frequently with disturbance-related invasive grass and forb species. This is habitat that has been altered by livestock grazing, fire, and cultivation and was likely converted from historically cultivated fields to livestock forage pastures. Wildlife habitat concerns in this habitat type include the establishment and spread of non-native invasive plant species, noxious weeds, lowered biodiversity and ecological stability, and altered fire regimes with the potential to spread fire into adjacent native shrub habitat and urban areas (IDFG 2005).

2.2.4 Agricultural Lands

There are approximately 70 acres of existing agricultural lands located on the HR property that are slated for conversion to residential areas. Currently, these areas are represented by a monoculture of alfalfa during the growing season and bare soil after harvest and tilling. Typically, plowed agricultural fields result in the potential establishment and spread of noxious weeds and non-native invasive plant species related to ongoing soil disturbance, transported livestock, and machinery from other locations with weed infestations. Limited riparian species exist along the Penitentiary Canal that borders the northern side of fields. Wildlife habitat concerns in this habitat type include the potential establishment and spread of non-native invasive plant species associated with the ongoing soil disturbance. There is generally only limited use of this type of habitat by wildlife. Upland game bird species and other avian species may utilize the agricultural land and adjacent waterways for cover and forage. Resident and winter migrant big game species may also seek forage in these fields during the winter. Mule deer have been observed forging in these fields too.

2.3 BOISE RIVER WILDLIFE MANAGEMENT AREA – HISTORY AND WILDLIFE SPECIES

In 1943, the IDFG used Pittman-Robertson funds to purchase more than 2,200 acres of prime mule deer *(Odocoileus hemionus)* winter range in the Spring Shores area of the Boise Mountains. As additional critical mule deer and elk *(Cervus elaphus)* winter range became available, it too was purchased, and today, the Boise River Wildlife Management Area (BRWMA) is a scattering of approximately 35,000 acres in three counties (Figure 8). The BRWMA is primarily a big game (mule deer) management area. However, over 300 wildlife species either reside or migrate through this management area and benefit from its management objectives.

Cooperative management efforts with the Idaho Department of Lands, U.S. Army Corps of Engineers, U.S. Bureau of Land Management, U.S. Fish and Wildlife Service, U.S. Forest Service, U.S. Soil Conservation Service and private landowners have resulted in a united effort to manage wildlife in the BRWMA. These varied entities strive to provide critical mule deer and elk winter range, improve the area watershed, and provide habitat for all wildlife species.

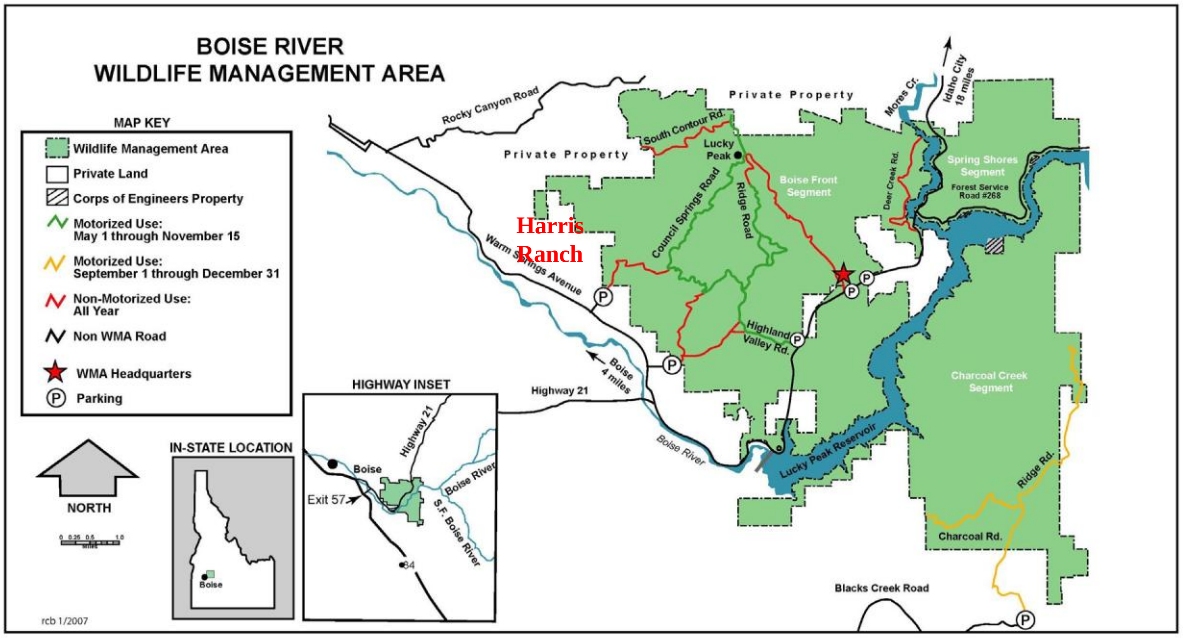

Figure 8. Boise River Wildlife Management Area in Relation to Harris Ranch (IDFG 2007).

Although numbers change from year to year, during some winters over 7,000 mule deer and nearly 500 elk have been recorded on the BRWMA (IDFG 2007). The severity of the winter plays a role in the number of big game present. During other seasons, both species are much less numerous, though quality range encourages many deer and elk to remain residents throughout the year. White-tailed deer *(Odocoileus virginianus)* inhabit creek and river bottom riparian areas of BRWMA at far lower numbers than mule deer and elk. A small resident population of pronghorn antelope *(Antilocarpa americana)* is present. Black bear and mountain lion also range over the BRWMA, while moose are an occasional visitor. Smaller mammals on the BRWMA include red squirrel, badger, skunk, red fox, and coyote.

A variety of raptor species use the BRWMA during the year. Bald and golden eagles are seen throughout the year, though their concentrations tend to increase during winter months. Goshawks, Cooper's hawks and sharp-shinned hawks frequent the BRWMA Douglas fir/ponderosa pine forests. Red-tailed hawks, northern harriers and American kestrels are common spring, summer and fall residents of BRWMA open country. It was only recently discovered that an incredible variety and number of raptors concentrate in a portion of BRWMA for a few days each year. Each fall, Lucky Peak serves as a "migratory funnel" for many raptor species migrating south from the McCall, Idaho area and beyond. The birds move through the Boise Mountains, merging along Boise Ridge before spilling down the slopes of Lucky Peak. This raptor concentration occurs each fall, with thousands of birds moving through. A similar spring occurrence is likely, though the birds have not been documented in the high numbers that characterize the fall exodus (IDFG 2005b).

Seven upland game bird species (sage-grouse, mountain quail, chukar, gray partridge, California quail, blue grouse, and wild turkey) roam the varied habitats of the BRWMA. Chukar and gray partridge are non-native introduced species. Other than sage-grouse and mountain quail, upland game bird species are varied and locally abundant. Mountain quail and sage-grouse were once abundant in the area but have declined in recent years.

Common resident and breeding songbirds on the BRWMA include many species. Western meadowlarks, chipping sparrows, canyon and rock wrens, vesper sparrows and sage thrashers inhabit upland areas. Western wood-peewees, willow flycatchers and song sparrows, together with yellow-breasted chats and a host of warblers inhabit riparian areas. Downy woodpeckers, black-capped chickadees, ruby-crowned kinglets and pine siskins inhabit conifer forest communities.

Hot, dry summers provide ideal conditions for resident reptiles. Gopher snakes, western rattlesnakes, rubber boas and sagebrush lizards are found throughout the area. Amphibians, including bullfrogs, northern leopard frogs and western toads find sanctuary in and near riparian areas.

Migratory and resident species of the BRWMA include:

- 234 Birds (the majority of which are migratory species)
- 66 Mammals
- 17 Reptiles
- 8 Amphibians
- 325 Total Wildlife Species (for a complete BRWMA species list, see Appendix B)

2.3.1 Livestock Grazing and the BRWMA

The foothills surrounding the proposed project area historically have been used to graze domestic livestock, primarily cattle and sheep. In the past, the Harris Ranch grazing permit within the BRWMA allotments has been broken into an eight pasture, rest rotation system. Wildfire and a lack of fences have altered the management of livestock in the BRWMA. Domestic livestock use of this area has had a significant impact on native plant communities (including special status plants), wildlife species, ground dwelling and nesting wildlife, and survival rates of wintering big game (LEPA 2003; Hanley and Page 1981; Skovlin *et al*. 1968).

The potential for domestic livestock to adversely affect plant communities and wildlife habitat is normally greatest when consistent heavy spring use occurs during the critical growth period of forage species and when soils are still saturated. Trampling, over utilization, and defoliation of palatable species reduces vigor, abundance, and reproductive ability; thereby, limiting the capacity of residual perennial plant communities to reestablish (Blaisdell and Pechanec 1949; Jones 2000). Hoof sheer and trampling can also negatively affect ground dwelling wildlife and ground nesting birds by destroying burrow systems and crushing nest/eggs (Hanley and Page 1981).

Domestic cattle also directly compete for limited resources with native ungulates, such as mule deer and elk. For the most part, mule deer are less affected by livestock grazing than elk. Mule deer will select habitats grazed previously by domestic livestock, providing there is remaining forage (Yeo 1993). However, elk generally will not use an area grazed by livestock the previous season; therefore, the use of critical winter habitat by domestic livestock can have a negative impact on wintering elk populations by reducing available critical winter habitat (Kratville 1989). The use of these areas by domestic livestock can also result in increased winter/spring mortality of big game by reducing the amount of available forage during critical periods, such as late winter and early spring when fat reserves are extremely low and need to be replenished.

In addition to direct impacts, livestock can indirectly affect plant communities and wildlife habitat. Cattle, sheep, and other domestic livestock can act as vectors for many invasive and noxious weed species, and create micro habitats for these species through soil disturbance (hoof sheer, bedding, etc.), which both benefit exotic species that are better adapted to livestock grazing at the expense of native species (Holecheck *et al*. 2001; Laycock and Conrad 1981). Native species, such as bluebunch wheatgrass and Idaho fescue generally exhibit reduced growth and reproduction when overgrazed, resulting in a transition from native perennial species to exotic annual species (Kimball and Schiffman 2003). The reduction of perennial reproduction and increased competition from invasive species can result in augmented fuel loads that reduce the interval between disturbance events (wildfire) and potentially enhance the size and severity of those events, which can further accelerate the expansion of exotic annual dominated communities, reducing natural habitat for wildlife species (Whisenant 1990).

2.4 HARRIS RANCH WILDLIFE

The Foothills portion of the HR property has been designated as critical winter range for big game, with mule deer numbers ranging from 15-270 per square mile, and elk numbers from 5-20 per square mile, depending on the severity of the winter. The majority of big game species access the HR property from the north and northeast. Hunting seasons near Lucky Peak can influence the number of big game at the HR property. Winter snow depths and severity appear to govern the number of big game that access the lowest elevations of the Foothills. The HR property and the greater Boise Foothills have been identified by the IDFG as a final destination area for big game during the winter months. Movement corridors that provide access to the Boise River have been identified on the eastern sides of the HR property where the Penitentiary Canal, Maynard Creek, and Ben’s Crow Inn are located on Warm Springs Road (Figure 9). There are also year round resident mule deer, elk, and antelope in the Boise Foothills.

Various upland game species, including quail, chukar, pheasants, mourning doves, Hungarian partridges, and wild turkeys are found on the HR property. Agricultural lands support the pheasant populations; upland shrub, grassland, and riparian communities support quail, chukar, and partridge. Water sources play a critical role in supporting upland game and other wildlife species at HR.

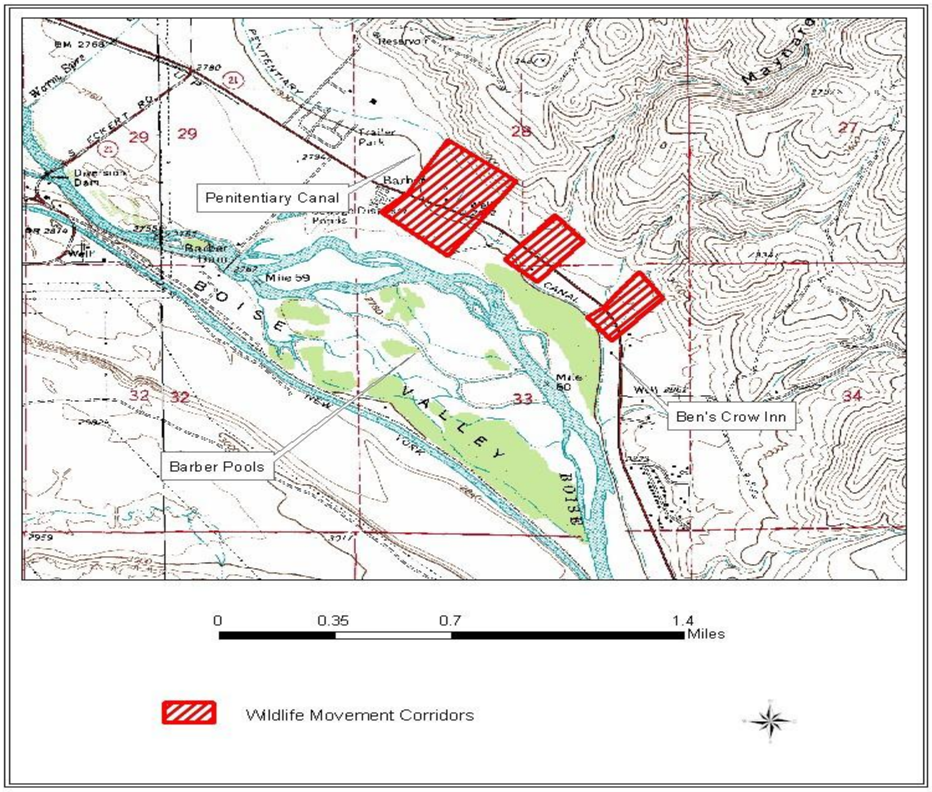

Figure 9. Primary Wildlife Movement and Migration Routes near Harris Ranch to Barber Pools. Source: Scholten, personal sketch April, 2002.

Non-game species include many of the raptors, mammals, reptiles, amphibians, nesting and migrating birds species you would expect to find in the lower elevation reaches of the BRWMA.

The Boise Ridge is an important migration corridor for both raptors and neo-tropical bird species. Fall studies conducted by biologists have documented thousands of birds migrating through on their way to the tropics for winter. Some of the larger drainages at HR may serve as migration corridors for some of these avian species.

2.5 HARRIS RANCH SPECIAL STATUS WILDLIFE SPECIES

The following section addresses wildlife species that have been identified by the IDFG as species of particular concern with regard to the proposed Harris Ranch development (Table 2). A short description of the species habitat use will be followed by a discussion of how that species relates to, or uses the HR property.

Idaho Fish and Game/Conservation Data Center (CDC) Wildlife State Ranking (S Rank): Ranks represent a prioritization scheme used by the CDC to determine the conservation status of a species. The rank is primarily based upon the number of known occurrences but other factors such as habitat quality, estimated population size and trend, range of distribution, and threats to species or habitat are also considered. See the IDFG website (http://fishandgame.idaho.gov/cms/tech/CDC/) for a detailed review and evaluation of this ranking system. The state rank refers to the species status within the borders of Idaho. State ranks (S ranks) are subject to periodic revision as new information is obtained on a species either in Idaho or elsewhere in its range.

S1	Critically imperiled because of extreme rarity or because of some factor of its biology making it especially vulnerable to extinction (typically 5 or fewer occurrences).
S2	Imperiled because of rarity or because of other factors demonstrably making it vulnerable to extinction (typically 6- 20 occurrences).
S3	Vulnerable (typically 21- 100 occurrences).
S4	Not rare, and apparently secure, but with cause for long- term concern.
S5	Demonstrably widespread, abundant, and secure.
E	Exotic or introduced species.
NTMB	Neotropical Migratory Landbird. As defined by Saab and Groves (1992), these are bird species that breed in Idaho and winter in tropical America between the tropics of Cancer and Capricorn.

Table 2. Harris Ranch Special Status Species with Associated Idaho Status and Rank.

Species	Status	State Rank
Mule Deer	Game Species	S5
Elk	Game Species	S5
American Pronghorn	Game Species	S5
Long-billed Curlew	Protected Non-game Species	S3- NTMB
Northern Leopard Frog	Unprotected Non-game Species	S3
Woodhouse's Toad	Unprotected Non-game Species	S3
Western Toad	Protected Non-game Species	S3
Great Blue Heron	Protected Non-game Species	S5
Bald Eagle	Protected Non-game Species	S3

2.5.1 Mule Deer

During winter months, mule deer browse on a wide variety of woody plants when snow covers many grasses and forbs. Common browse plants include bitterbrush, sagebrush, aspen, dogwood, juniper and Douglas fir. They graze on various grasses and forbs heavily during spring, summer and fall. They do occasionally feed on agricultural crops.

Streubel (2000) found that deer in Idaho showed a high fidelity to their summer range, but less so to their winter range; deer from one summer range migrated to different winter ranges. Mule deer migrate from high mountainous country to lower valleys and Foothills during late fall to avoid heavy snow (Figure 10). Big game winter habitat in western North America is defined as south facing areas of mild to medium slopes (Thomas *et al*. 1979, Hoover and Willis 1987, Mowat 1999).

Cold temperatures and snow depth trigger the mule deer migration from summer range in the Boise Mountains to the historic winter range along the Boise Foothills. The BRWMA above HR provides winter habitat for more than 7,000 deer, depending on the severity of the winter and snow pack. Densities can range from 12 to 270 deer per square mile. In comparison, the summer range mule deer occupy is much larger than the Boise

Foothills winter range. Thus, winter range represents a smaller amount of area to support the same number of deer, and represents a critical area for the forage, shelter, and survival.

Lower elevation habitat in the foothills are very important during hard winters (Figure 11) as deer try to avoid deeper snow, which can hamper their abilities to find forage and quickly deplete their necessary fat storage (IDFG 2005b).

Small changes to the lower Boise Foothills can have large repercussions for big game winter range across a broad area, especially during hard winters. Mule deer that come to the Boise Foothills winter range attempt to conserve stored energy in order to survive the hard winter months. Winter range is used as an area to reduce movement and forage, ultimately to maintain an energy level that prevents potential starvation.

The Boise Foothills are a final destination endpoint for big game during their winter migration. Along the Boise Foothills however, there are movement corridors that big game utilize to access different areas in the Foothills and along the Boise River. A movement corridor exists in the vicinity of HR where big game species travel between the Boise Foothills and the Barber Pools/Boise River (Figure 9).

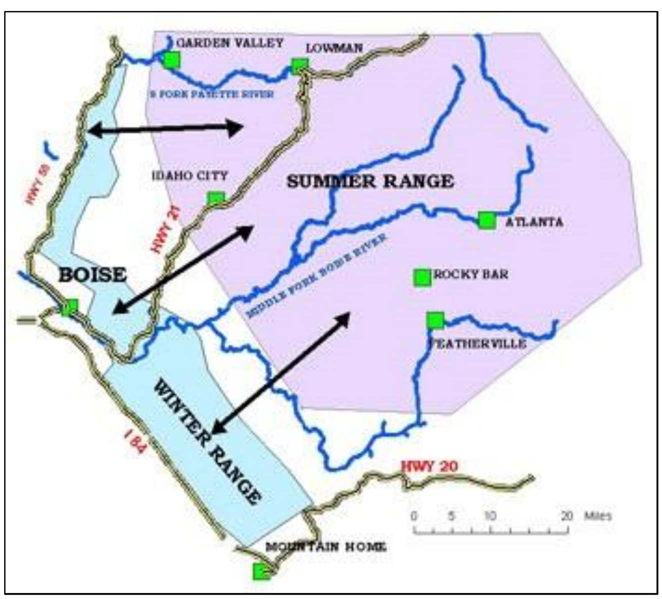

Figure 10. Boise Region Big Game Summer and Winter Range (IDFG 2005).

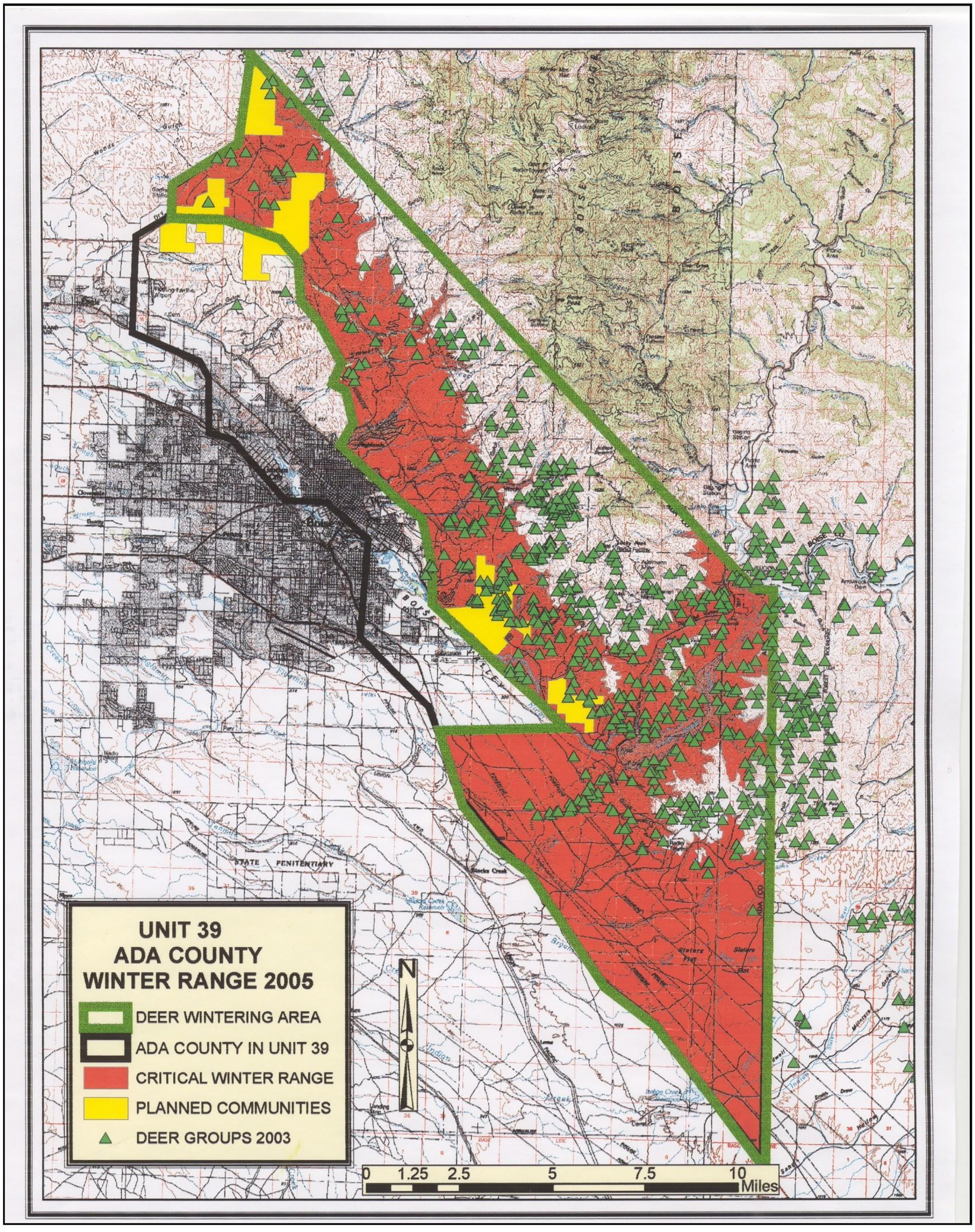

Figure 11. Boise Foothills Deer Critical Winter Range and Observed Deer Groups **(IDFG** 2005).

2.5.2 Elk

Elk seem to prefer mountainous country with mixed open, grassy meadows, marshy meadows, river flats, aspen parkland, as well as coniferous forests, brushy clearcuts, forest edges, and shrub steppe. Some populations live year-round in sagebrush desert, using grass-shrub for feeding and tall shrub or pole timber for resting in spring. They feed in clearcuts and shrub fields and rest in pole timber in summer and stay in mesic (moderate moisture) pole timber in the autumn (Streubel 2000). Elk habitat varies greatly according to location. They are primarily a grazing species, relying of grasses for most of the year, but they also consume forbs in summer, and may browse on willow and aspen where grasses are unavailable, especially during winter months. The BRWMA supports approximately 500 elk during the winter.

Elk migration to winter range is very similar to mule deer from the Boise Mountains. However, there is a resident elk population that uses the Boise Front throughout the year. The number of elk that use the BRWMA is far fewer than mule deer, but the winter habitat is just as important. In Idaho, and throughout the northern Rockies, herds move to lower elevations in winter to feed. Individuals exhibit a high fidelity to their home range, but may abandon it if they are excessively disturbed (Streubel 2000).

2.5.3 American Pronghorn

Pronghorn are generally found on grasslands, shrub steppe, and Foothills. They seem to prefer rangeland with vegetation less than two feet in height and wide open, expansive range. They are often found in low shrubs such as sagebrush, and grassy vegetation in arid regions with less than 10 to 12 inches of snow on the ground in the winter. This may lead them to upper, wind-swept slopes in the winter, or fairly long migrations between summer and winter range. In the winter, southern Idaho pronghorn depend heavily on browse, especially sagebrush.

Their home ranges vary in size, but an Idaho study (Autenreith *et al*. 1975) found summer home ranges averaged about 8 square miles. Home range of yearlings was two to five times greater than adults. Large herds form in the winter but disperse in spring and form separate bachelor and female-fawn groups in spring and summer. In Idaho, pronghorns typically migrate to lower elevations in winter and move back to the heads of mountain valleys in the spring.

Pronghorn have some unique adaptations for their existence in open country. These adaptations allow them to be the fastest mammals in North America. They have been clocked at nearly 70 mph and they can obtain and maintain speeds of 30 to 45 mph for fairly long distances. Historically, pronghorn were extremely numerous throughout the west, but agricultural development, cattle grazing and construction of fences drastically reduced their populations. Pronghorn generally do not jump fences. Consequently and their daily movements, and even seasonal migrations, have been blocked by fences. Some pronghorn do crawl under fences but require fences with a bottom wire > 16" off the ground for effective passage. A year round resident population of pronghorn (approximately 60) utilizes the BRWMA and portions of HR. They are most likely found on low slope areas and gentle rolling hills from the black cliffs to, and perhaps beyond, the Table Rock area.

2.5.4 Long-billed Curlew

Long-billed curlews (*Numenius americanus*) are found on prairies and in grassy meadows, generally near water. During migration and in winter, they are also found on beaches and mudflats. These birds breed on the dry, native grasslands of the West, where they use their long, curved bills to feed on grasshoppers and other insects. Long-billed Curlews' small population size and negative population trends, combined with threats of

habitat degradation on both their breeding and wintering grounds, make this species a very high conservation priority. During the late nineteenth and early twentieth centuries, populations of many shorebirds, including Long-billed Curlews, were decimated by uncontrolled hunting. Breeding curlews disappeared from large portions of their range during these decades (Andrews and Righter 1992, Stewart 1975). With protection, the populations of most shorebirds breeding in the arctic recovered. However, Long-billed Curlews nest in the grasslands of central and western North America, where habitat destruction and other factors have not allowed for a sustained population recovery during the twentieth century. In fact, its breeding range has continued to contract in some areas. The U.S. Shorebird Conservation Plan lists Long-billed curlew as a "Highly Imperiled" species of shorebird, based on population trends, relative abundance, threats on breeding grounds, and threats on non-breeding grounds (Brown *et al.* 2001).

In Idaho, curlews prefer open shrub steppe and grasslands containing short vegetation for nesting, and often feed in agricultural areas (Karl 2000). Long-billed curlews nest on both wet and dry uplands of Great Plains grasslands, preferring gravelly soil. In winter, the species is found in estuaries, mudflats, salt marshes, sandbars, coastal shorelines, sandy beaches, lake edges, and grain fields. Curlews migrate into southwestern Idaho during late March. While in Idaho, curlews lay eggs, and then tend to their nestlings and fledglings. Most curlews typically depart Idaho by mid-August. At Harris Ranch and in the surrounding BRWMA, curlews utilize the low slope areas along the tops of the Foothills as nesting areas.

2.5.5 Amphibians

At Harris Ranch, amphibians can likely be found along or near the Boise River, the artificial trout spawning stream, in wetland areas, and along or near canals. Although generally associated with wet areas, some amphibian species can range quite a distance from a given water source. For those species the much of the total HR property may be important habitat.

Northern Leopard Frog

Northern Leopard Frogs (*Rana pipiens*) in Idaho are generally associated with heavily vegetated marshes, ponds, streams, and wet areas. Otherwise, they seem to breed in areas that are also heavily vegetated. In Idaho, Northern Leopard Frogs are found throughout much of the southern part of the state, following the Snake River Plain. Populations also exist in the northern portion of the panhandle. These frogs hibernate in streams, ponds or other aquatic locations during the winter. They disperse to moist uplands or permanent water during dry-up in summer and require moderately high ground cover for concealment. They are generally preyed upon by garter snakes. When disturbed, these frogs leap rapidly and erratically. Very little information exists to explain their decline in Idaho. According to the CDC (2004), the last recorded observation of this species in the vicinity of HR was 1973.

Woodhouse's Toad

Woodhouse's Toads *(Bufo woodhousii)* are typically found in habitats such as prairies, agricultural areas and brushy flats often associated with a water source. The water source may vary from irrigation ditches, ponds, and small lakes to backwaters of the Snake River. Even though there is generally water in the area, they may forage quite a distance from the water source that they mate and lay eggs in. These toads are active in wet or dry weather. They are inactive during the cold months of fall, winter, and early spring. When inactive, they burrow underground, or hide under rocks, plants, or other cover. According to the CDC (2004) there has never been a recorded observation of this species at the HR property.

Western Toad

Western Toads *(Bufo boreas)* are largely terrestrial but can generally be found near water. Their habitats range from mountain meadows to brushy desert flats. Western Toads dig burrows in loose soil or use burrows of small mammals. At low elevations, individuals are mainly diurnal in late winter and spring, and nocturnal in summer. Hibernation occurs in winter in cold climates. Birds and garter snakes prey on adults, and predatory insect larvae feed on young. Western toads appear to be declining in the Greater Yellowstone Ecosystem and in other parts of western United States.

Western Toads are widely distributed in Idaho and can be found in appropriate habitat throughout most of the state. The last recorded observation of this species in the vicinity of HR was 1922 (CDC 2004).

2.5.6 Great Blue Heron

Great blue herons (*Ardea herodias*) can be found on freshwater and brackish marshes, along lakes, rivers, bays, lagoons, ocean beaches, fields, and meadows. In Idaho, the species follows major watercourses. Herons build their nests in trees, sometimes in shrubs, and rarely on the ground. They nests in colonies (or rookeries). Colony size can vary from few pairs to hundreds of pairs; a colony may be displaced by Bald Eagles. Individuals usually forage while standing in water, but will also forage in fields or drop from air (or perch) into water. In Idaho, some herons are year-round residents while others are breeders or transients (Karl 2000). The species is the most common and widely distributed colonial waterbird in Idaho. This highly watchable species nests in the vicinity of and forages within the project area. A local rookery exists on the edge of the Boise River, southwest of HR and across the river (south bank), near the future site of the Park Center Bridge. Great blue herons have been observed using the existing wetland areas and open pastures of HR property to forage.

2.5.7 Bald Eagle

Refer to the Harris Ranch Bald Eagle Impact Assessment and Management Plan (Howard 2006) for a complete species description and mitigation plan (Appendix H).

3.0 ASSESSMENT OF IMPACTS / DISCUSSION OF WILDLIFE ISSUES

This section describes the potential impacts to wildlife and their habitat resulting from the construction of the proposed Harris Ranch development and its long-term presence. The topics discussed are by type of impact or action that is proposed. Information used to identify and assess impacts includes: a review of relevant scientific literature, previously prepared environmental documents, interviews with IDFG personnel, individuals with local, long-term knowledge of the area, and best professional judgment.

Knowledge is, and always will be, incomplete regarding many aspects of the terrestrial species and vegetative communities and their interrelationships. The ecology, inventory, and management of ecosystems are a complex and evolving discipline. However, basic ecological relationships are well established, and a substantial amount of credible information about the ecosystem in the area of the proposed project is known. The impacts were evaluated using the best available information.

Table 3. Summary of Wildlife Impacts.

Impact/Action	Source	Wildlife Impact	Species Affected	Duration
Conversion of Open Space	Construction; Planned Community	Permanent Habitat Loss	All	Long-term
Noise	Construction	Area Avoidance	All (Primarily Bird and Big Game species)	Short-term
Introduction of Invasive and Noxious Species	Construction; More People; Recreation	Habitat Loss and Degradation	All	Long-term
Increased Human Presence	Construction; Planned Community; Recreation	Interaction; disturbance; reduction of undisturbed habitat	All	Long-term
Increased Traffic	Construction; Planned Community; Recreation	Elevated Road Kill	All (primarily deer)	Long-term

Table 3. Summary of Wildlife Impacts.

Impact/Action	Source	Wildlife Impact	Species Affected	Duration
Increased Recreation	More People; Increased Access	Interaction/ disturbance/Stress; Habitat Fragmentation; Reduction in effective big game winter habitat through disturbance; Habitat damage	All	Long-term
Pets	Planned Community; Recreation; Foothills Access	Interaction; Stress; Mortality; Reduction in effective big game winter habitat through disturbance	All	Long-term
Wildland Fire Risks	More People; Increased Access/ Recreation	Habitat Loss and Degradation; Mortality	All	Long-term
Nuisance Wildlife	Wildlife entering the community	Mortality; relocation	Various	Long-term
Big Game Disease	Less available open space resulting in higher densities of big game	Elevated potential of disease spread	Big Game	Long-term

3.1 Conversion of Open Space and Habitat Loss

All proposed areas for development in the concept master plan represent areas of permanent habitat loss or alteration for various wildlife species. Permanent habitat loss will occur due to the conversion of current open space for the development.

The majority of development is proposed to take place in the relatively flat river valley floodplain to the north and south of Warm Springs Road (Figure 3). Removing the majority of existing ground vegetation (grasses, forbs, shrubs, trees, etc.) will have substantial negative effects on all forms of wildlife (ground dwelling, ground nesting, above ground nesting, burrowing, etc.) that currently inhabit or utilize the property for cover, foraging, or resting. A complete loss of existing habitat is anticipated in most construction areas, which will result in some level of mortality for ground dwelling wildlife and displacement of most other forms of wildlife. Existing trees that are incorporated into the landscape design of the development, or occur in designated open areas, will continue to provide ongoing habitat for some avian species that adapt well to manipulated environments and high activity construction areas. Avian species benefit the most in these residential areas due to the abundant perch, roost and nest trees associated with neighborhood development. Riparian and wet areas that are either unsuitable for development, or have been selected to remain as open space, will provide small, local areas of refuge for species that inhabit them.

Permanent conversion of the HR property along Warm Springs (in the flat floodplain) would likely have a measurable effect on wintering, and possibly on resident, big game in the region. Big game generally use the agricultural fields along Warm Springs and the base of the Foothills in the late winter months, especially during deep snow years. Following development, the HR fields would no longer be available to mule deer which, consequently, would have to find forage elsewhere. Converting HR to a residential and commercial area could act as a barrier keeping big game from moving to and from the Boise River corridor. Some Fish and Game biologists believe big game do not necessarily need to access the Boise River as a source of water, which can be derived from their forage and alternate water sources located to the north of Warm Springs Road. Regardless of need, big game likely will continue to attempt to access the river as a result of instinct and habit. Accessibility will be permanently restricted in the HR development area and conflict with homeowners and their property is likely, although it is possible big game will learn to access the river via an alternate route, likely to the east of HR. Development that extends into the foothills will have substantial negative impacts for wintering big game, especially during hard winters, by eliminating usable space, increased human disturbance, and fragmenting other usable areas in the vicinity, and blocking movement to useable areas such as the Boise River floodplain and riparian area.

For long-billed curlew, no negative impacts are anticipated as a result of converting the valley bottom habitat. However, any development into the foothills could have negative impacts for curlews by permanently converting potential habitat into neighborhood. Amphibians would be affected by the conversion of potential habitat into manipulated environment. However, amphibians can exist in a manipulated environment if wetland and riparian areas are preserved and buffered. Great blue herons would be negatively affected resulting from the permanent conversion of open space and foraging areas to residential developments.

Heavily manipulated or disturbed areas are subsequently prone to invasive plant and animal species that compete or replace native species. Although some native species thrive in these habitat types, most are eliminated. The permanent replacement of existing wildlife habitat with non-native species, and the concomitant reduction in biodiversity, is a primary concern (IDFG 2005).

3.2 CONSTRUCTION NOISE

Current noise levels are associated with general vicinity activity such as existing neighborhoods, a local school, recreational use of the Greenbelt and Boise River, airplanes, and primarily traffic on Warm Springs Road. Large machinery and equipment, construction crews, and the building process will increase noise levels during the construction phases of the proposed development. Noise associated with construction may have an effect on many wildlife species that exist within or adjacent to the property, but the magnitude is unknown and likely species specific. Big game species would most likely avoid the area during construction. Impacts resulting from construction noise likely would be very local in scope and short-term in timeframe.

3.3 INCREASED HUMAN PRESENCE

Human presence at HR is currently associated with existing neighborhoods and houses, a local school, recreational use of the Foothills and Greenbelt, recreational activities on the Boise River, local or commuting traffic on Warm Springs Road, local business, and other local activities that generally involve a small number of people. The level of current human presence at HR is generally low compared to the influx of human activity that will be associated with the construction and build-out of the proposed development. Various forms of wildlife respond differently to human interaction and presence. Big game are generally expected to avoid the area when people are active. Approximately 2,800 new dwelling units are proposed for the development area at HR. That amount of residential growth will bring a substantial influx of people to the area. Wildlife in the vicinity (both close and potentially distant) could be affected by impacts that are associated with increased human presence in an area. The following headings address those issues and the potential wildlife response.

3.3.1 Traffic

Traffic levels along Warm Springs Road are anticipated to increase slightly during construction and significantly with the influx of residential houses, businesses, schools, and parks. Road kill rates for all species are likely to increase to some degree. From 1982-2004, the number of deer killed annually ranged from 20-81 (Table 4).

Two primary factors will determine the level of impact to wildlife resulting from increased traffic along Warm Springs Road: number of vehicles and speed of travel. It is reasonable to assume that the number of animals killed as a result of vehicle collisions will increase as the number of vehicles increase. Mule deer could be negatively impacted if increased traffic levels and construction takes place during the winter months when mule deer and other big game are utilizing their winter range in the Foothills and BRWMA surrounding Harris Ranch, as well as the Boise River. Speed limits on Warm Springs will likely be the number one factor over which mangers will have some control. If speed limits remain at 45 mph, the level of impact is anticipated to be substantial. Ongoing development and population growth in the vicinity of Harris Ranch along Warm Springs Road and Highway 21 will likely exacerbate the mule deer road kill situation.

Table 4. BRWMA Road Kill Data 1982-2004* (IDFG 2005).

Year	Warm Springs Kills	Hwy 21 Kills	Total Recorded Kills**	% Warm Springs	% HWY 21	Number of Elk Represented in Total
2003-2004	36	113	149	24	76	***
2002-2003	40	128	168	24	76	***
2001-2002	81	128	238	34	54	3 (HWY 21)
2000-2001	40	128	169	24	76	2 (HWY 21)
1999-2000	28	131	162	17	81	4 (HWY 21)
1998-1999	38	112	154	25	73	1 (HWY 21)
1997-1998	20	79	101	20	78	2 (HWY 21)
1996-1997	23	78	111	21	70	0
1992-1993	71	144	215	33	67	***
1982-1989	49	133	182	27	73	0
Totals	426	1174	1649	27	73	12

* This information only refers to deer and elk that are processed by personnel at the BRWMA. Other animals may have been picked up by the public or others officers and are not recorded in this dataset.
** Road kill totals represent all Idaho Department of Fish and Game road kill recording areas (not just Warm Springs and HWY 21)
*** Number of elk killed was not reported on data sheets during these years.

3.3.2 Recreation

The Boise Foothills and BRWMA provide a wide range of recreational opportunities, including, but are not limited to: walking, hiking, jogging, mountain biking, ATVs, dirt biking, snowmobiling, equestrian, hunting, shooting, sightseeing, wildlife watching, hang and para-gliders, antler hunting, dog training, photography, llama training, and fire school training. All forms of recreation are not the same and have different potential impacts. In the recent past, the Foothills have become increasingly popular and utilized by local citizens of Boise and surrounding communities. They are a common topic in the local newspapers and on TV news, receiving abundant publicity and subsequently more interest and recreational use.

Recreational activities and pets pose the threat of wildlife harassment and habitat damage. Wildlife harassment can affect the survival of certain wildlife species, influence growth rates, behavior, and reproduction (IDFG 2003). A broad definition of harassment is any activity by humans or their domestic animals, which increases the physiological cost of survival or decreases the probability of successful reproduction of wildlife. Harris Ranch is directly adjacent to the Boise River BRWMA, an area managed for the conservation of wildlife and wildlife habitat, especially winter range. New homes and an influx of residents will increase the pressure for recreational use in the BRWMA and open spaces near HR. The potential negative impacts to wildlife that could result from this increase in recreational activities are substantial.

For big game species, a primary concern regarding recreation and pet harassment is during winter months when big game on the Boise Foothills are in a weakened state and sometimes in poor physiological condition. Disturbance can be most detrimental at critical times; very cold weather, weakened animals, in late winter, during late pregnancy and birthing. Harassment is particularly damaging when the animals are in poor condition. Exertion during cold weather, particularly of weakened animals, is likely to precipitate emphysema and kill the animal (IDFG 2003, Geist 1971).

If allowed, Boise and local HR residents could potentially view the HR Foothills and BRWMA as a public playground in a natural setting, resulting in maximum impacts to local wildlife species. The amount of potential negative impacts on wildlife relies solely on the amount of public education and regulation that takes place at HR.

3.3.3 Pets

Domestic pets and wildlife do not mix. Wildlife harassment resulting from free roaming pets is an ongoing problem throughout the United States. The location of the proposed HR development along the open space areas of the Boise Foothills and the BRWMA create a higher potential for adverse wildlife impacts resulting from domestic pets.

Dogs

Dogs harass and kill many wildlife species. Dogs can be especially destructive when wildlife species are most vulnerable during winter. People love the open space surrounding Boise, especially for the opportunity to exercise with their dogs off-leash. Harassment issues that were discussed in the above recreation section are extremely exacerbated when combined with a free roaming dog. The area of wildlife impact is enlarged substantially to include the range covered by a dog. Harassed and flushed wildlife species usually provoke dogs to chase and sometimes kill them. This scenario is especially dangerous for big game during wintering periods and in the late spring when green up is occurring. Big game energy reserves are depleted from the stressors of winter during these times and the animals are at their physiological edge; adding harassment only exacerbates the situation.

Wildlife impacts from free roaming dogs could become a serious problem resulting from a cumulative impact of dense recreation across the entire Boise Front.

Cats

Domestic and feral free roaming cats have been shown to become major predators on game bird and songbird populations. Feral cats eat predominantly birds, rodents, and small mammals. Domesticated cats, even when fed regularly by their owners, retain their motivation to hunt. These cats also prey on the same animals that feral cats do. Feral and free-ranging cats kill millions of native birds and other small animals annually; birds constitute approximately 20%-30% of the prey of feral and free-ranging domestic cats (Drennan 2005). Free-roaming cats are likely to come in contact with rabid wild animals and thus spread the disease to people. They pose a risk to the general public through transmission of other diseases like toxoplasmosis, feline leukemia, distemper, and roundworm.

Prohibition of free ranging dogs and cats in neighborhoods and open spaces near wildlife habitat must be implemented to minimize or eliminate negative impacts to wildlife.

3.4 WILDLAND FIRE

Wildland fire is an important aspect of ecology in western shrub and grasslands. However, habitats dominated by introduced annual grass species are resulting in increased fire frequency and intensity, which can destroy native vegetation over very large areas. The loss of native plants in the Foothills allows non-native plants to dominate a site, and in turn can result in a reduction or loss of wildlife species, which depend on native grasses and shrubs to survive. During the summer and fall months the Boise Foothills vegetation becomes very dry. The encroachment of annual invasive grasses has also added a carpet of very dry thick material to the ground surface. At these times of the year, the Boise Foothills essentially become a tinderbox waiting for an ignition source. Increasing the number of homes, businesses, residents, and recreational activities in the area surrounding HR will likely increase the potential for wildland fire ignition. Potential ignition sources may include, but are not limited to cigarettes, illegal campfires, fireworks, ATVs and motorbikes.

3.5 INVASIVE PLANT AND NOXIOUS WEED SPECIES

Weeds are exotic plant species that invade and displace desirable native vegetation. Weeds in the Foothills are typically spread through the dispersal of seed or plant parts. Wind, water, animals, machinery, and people carry seeds and plant parts from one location to another where the weeds can establish.

Invasive and noxious species are present on the HR property, in the surrounding Foothills, and the BRWMA. Invasive and noxious weeds thrive in disturbed soil. Ground disturbance gives invasive species an opportunity to establish and spread because existing vegetation has been removed or disrupted. Once weed species have gained a foothold, they can spread into adjacent stands of native vegetation and spread. The establishment and spread of invasive species can directly affect vegetation by increasing the overall competition with native species for limited resources (water, nutrients, space, etc.). Over time, invasive species also can alter the structural and functional components of a system (i.e., soil structure/function, hydrologic function, fire return intervals, energy flow, etc.) severely enough that re-establishment of native or desirable species is extremely difficult (Barbour *et al.* 1999; West 1993). Compared to perennial species, the root structure associated with annual grasses provides very little soil stability and contributes little organic matter to the soil structure, increasing the likelihood of erosion and soil loss during times of heavy precipitation and runoff.

Construction activities at HR will create a large amount of ground disturbance, consequently creating ideal conditions for weedy species. The ongoing presence of large amounts of residents and recreational users will further facilitate the introduction and spread of invasive and noxious species. Later in the document, mitigation recommendations will provide guidance to attempt to minimize infestation. If these measures are not carried out, there would be a large potential for negative impacts to surrounding habitat areas.

3.6 NUISANCE WILDLIFE IN THE COMMUNITY

When open space is developed for housing, wildlife will not recognize property boundaries and will generally become a neighborhood nuisance problem. Several wildlife species will continue to access the proposed residential areas, attempting to make a home, forage, or utilize it in other ways. These issues could involve a wide spectrum of wildlife species, ranging from Mormon crickets to snakes, skunks, raccoons, burrowing mammals, rodents, deer, elk, even mountain lions and wolves. During winter months, big game seeking out forage will likely enter the neighborhoods and feed on ornamental plants. Most people enjoy viewing big game, and seldom do communities want to eliminate access to a local herd. Tolerances for deer, however, are quite variable depending on personal preferences, past experiences, and ecological perspective. Nuisance wildlife interactions typically result in a phone call to the local IDFG office, complaining and demanding that someone diffuse the situation. This can result in a major waste of valuable state resources and time, which could be better spent doing the job they were hired for rather than rectifying residential calamities.

This interaction, while a potential nuisance to residents, could also have an adverse impact on the encroaching wildlife species. Smaller species will likely be removed or dispatched, while larger species will likely be trapped, chased, or relocated off the property. Some species will be left alone for viewing pleasure. These interactions can be managed and directed by neighborhood Covenants Conditions and Restrictions (CC&Rs) regulations, fencing restrictions, landscaping design and vegetative species choices.

3.7 BIG GAME DISEASE

There is a risk of mule deer becoming more susceptible to disease transmission as a result of having less space to utilize. This threat could likely occur from more of a cumulative impact of multiple developments occurring over many years across the entire eastern Boise Foothills. An increased susceptibility to disease could result from concentrating deer on lesser amounts of, and often lesser quality, winter range (Vayhinger 2005).

4.0 ACTIONS TO AVOID, MINIMIZE, AND MITIGATE WILDLIFE IMPACTS

This section outlines specific and general actions that will be or have already been taken by the Harris Ranch Neighborhood Development in an effort to minimize impacts to wildlife. These actions are a compilation of local and regional professional suggestion and judgment, existing neighborhood and development wildlife mitigation plans, state and federal technical references, and general research. Incorporating these actions into the proposed development will mitigate many of the negative impacts on wildlife resulting from permanent habitat conversion and increased human presence, as well as facilitate an ongoing legacy of public education, understanding, and respect for the natural environment that surrounds HR.

Existing Conservation Efforts at Harris Ranch

The Harris Ranch development has already taken several significant steps to address fish and wildlife management on the property. It is important to discuss past and current efforts initiated by the HR development to illustrate their vision and commitment to a conservation based community. The following list outlines actions completed or in progress:

- *Alta Harris Creek* – This is a new side channel of the Boise River, located on the HR property, which was constructed for the purposes of restoring fish spawning, rearing, and over-wintering habitat, all of which have been lost over time due to a changed river ecosystem (Trout Unlimited 2005). When completed the channel will be approximately one mile in length. The side channel is also being designed to connect the Boise River to the Barber Pools which will allow fish passage (around Barber Dam) between these two Boise River sections for the first time in a century. Construction was initiated in 2005 and the side channel now has water flowing through it. Land Trust Treasure Valley administers a permanent conservation easement (approximately 10 acres) which buffers and includes Alta Harris Creek. The side channel will create additional riparian habitat at Harris Ranch.

- *Dallas Harris Legacy River Walk* – Forms a cornerstone for an approximately 25 acre riverfront natural conservation area that will feature a gravel path, with the remainder of the area being enhanced to mirror a natural state (Howard 2006).

- *Boise River Greenbelt Path* – HR agreed to relocate the greenbelt path through the HR property from its existing path along Warm Springs Road. The new greenbelt alignment will be outside a 200 ft. riparian area buffer zone. Design measures are being utilized to minimize potential wildlife impacts that could result from recreation in those minimal areas that are within that buffer area (Appendix H).

- *Nature Preserve* – The Harris Family has donated land directly adjacent to the Barber Pools Wildlife Area (directly northeast of barber dam) for the purpose of a permanent nature preserve. This piece of crucial habitat will serve as a long-term legacy of habitat preservation as well as a compliment to the objectives of the Barber Pools Wildlife Area.

- *57 Acre Donation to Permanent Open Space* – In December of 2006 Harris Brighton, LLC. donated approximately 57 acres of foothills property at Maynard Creek for the purpose of permanent open space. The most important part of this donation is that it is adjacent to the BRWMA and will add to the continuous open space of the Boise Foothills. Generous donations like these solidify Boise's commitment to open space, which provides permanent habitat for resident and migrating wildlife species.

- *Marianne Williams Park* and *Alta Harris Community Park* – These two parks combined will provide approximately 83 acres of open space and continue to protect nearly two miles of Boise River front riparian habitat. Certain wildlife species will benefit from the passive open space within these parks.

- *Commitment to Open Space* – The proposed HR development will contain approximately 785 acres (48% of the project area) of open space. Open spaces will be composed of approximately 710 acres of foothills conservation areas (excluding the 80 acres of Idaho Power Corridor but including the 80 acre Bizek holding) and approximately 75 acres of open areas along the Boise River. This percentage defines the HR commitment to a conservation based neighborhood, which takes wildlife management seriously. Foothills vegetation that is left as open space will continue to provide a cumulative benefit for wildlife across boundaries of land ownership because it is adjacent to public land in the BRWMA.

- *Foothills Rehabilitation/Restoration BBQ* – Harris Ranch has started an annual tradition of hosting a BBQ/festival to support foothills fire rehabilitation efforts. This provides a recognition and incentive program for individuals who donate their valuable time to support IDFG fire rehabilitation and restoration programs in the Boise Foothills. Harris Ranch remains open to utilizing funding from the BBQ for rehabilitation expenditures (e.g. planting materials, tools, etc.) instead.

The goal of this mitigation plan is to build upon the many existing conservation actions in an effort to create a long-term, comprehensive wildlife management plan at HR. The following recommendations section take a three-tiered approach to addressing adverse wildlife impacts resulting from the proposed development at HR. As stated in the introduction, the three tiers are defined as:

Avoid	Identify critical habitat types and avoid development or habitat alteration in those areas.
Minimize	Identify actions that potentially threaten the ongoing presence or success of a particular species, or wildlife biodiversity in general, and reduce those actions to an acceptable level. Create restrictions that would limit actions within those areas.

Mitigate Define potential actions that could be taken to enhance or create wildlife habitat in an effort to alleviate habitat loss or alteration in other areas.

4.1 HARRIS RANCH CONSERVATION DIRECTOR

Some impacts to wildlife resulting from the HR development are short-term, although the effect and resolution may be long-term. Habitat loss is one of many examples. Other issues related to the development will be on-going. Examples include, but are not limited to: (1) nuisance wildlife within the development, (2) dogs belonging to homeowners running at large when big game is on winter range, (3) well meaning, but misguided, residents feeding deer in the winter, and (4) habitat enhancement projects. While one time issues (e.g. habitat loss) can be predicted and either avoided, minimized, or mitigated, long-term concerns (e.g. dogs at large) will require constant monitoring and quick response.

A full time position will be employed at Harris Ranch to implement this habitat management plan. The Harris Ranch Conservation Director (HRCD) will be the primary agent to enforce the provisions of this and to implement habitat enhancement projects identified in this plan. Appendix C offers a detailed account of what the HRCD duties will be at HR and the funding mechanism to support the position. The HRCD will be responsible for the following actions:

- Initiate habitat enhancement projects.
- Implement noxious weed abatement.
- Monitor and report the success of all habitat restoration efforts.
- Coordinate with cooperating organizations and agencies to bring interpretive educational seminars and presentations to HR residents.
- Compose and distribute a neighborhood wildlife video or manual to residents.
- Maintain a habitat conservation website for HR.
- Apply for grants and matching funds to supplement a habitat conservation fund.
- Review design of and oversee construction of fences.
- Establish and implement a wildlife conservation and education program for Harris Ranch (wildlife manual, newsletter, website, interpretive signage),

- Resolve some real-time wildlife issues (e.g. skunks, deer, beaver, etc.)
- Serve as a liaison between homeowners and agencies for significant wildlife and habitat issues.
- Enforce the provisions of this habitat management plan. Refer to Appendix C for enforcement mechanisms available to the HRCD.

The position will be hired through an independent wildlife committee, and funded through the future Homeowners Association. The HRCD will be independent of the future Homeowners Association so the position remains based in wildlife and conservation issues without being steered, influenced, or financially governed by other interests. This position will be hired prior to the construction phases at HR. This will enable the HCRD to be involved with all planning and wildlife issues that take place.

4.1.1 Conservation Fund

The HRCD will be funded through a conservation fund with income three sources: (1) A deed transfer fee of $300 will be assessed and collected each and every time a deed is transferred (including the initial and all subsequent deed transfers); (2) an annual $100 Conservation Fee per household included in the homeowners' association dues, and (3) an annual assessment on commercial property at the rate of $0.10 per square foot of commercial space. The deed transfer fee of $300 will be levied each time a property is sold at Harris Ranch. A portion of this fee ($200) will be refunded if, within the first two years of deed transfer, the resident attends a minimum of two community wildlife educational presentations and/or habitat restoration projects (community or IDFG).

Because the Conservation Fees during the initial phase(s) will be inadequate to support a Conservation Director and mitigation and education programs, the Harris Ranch Limited Partnership has committed to underwrite the difference between the Conservation Fees collected and the target goals for the first ten years. The conservation fund will be maintained in perpetuity and fees will be adjusted annually according the Consumer Price Index to ensure the fund's continued financial strength.

Each year the fund will withhold 10 percent of its budget for the purpose of off-site mitigation. Starting in Year 1, and continuing in perpetuity, 10% of the Conservation Fund will be committed to offsite mitigation to benefit wildlife winter habitat in the Boise Foothills. The specific mitigation actions will be determined by the Authoritative Oversight Committee (AOC). These funds shall not be used for the purchase of capital equipment. For further description of how the off-site conservation withholding will be used, see Section 4.3.

The minimum (absent speculation on house resale rates and related deed transfer fees) proceeds expected from the Conservation Fees are given in Table 5. Because commercial development is market driven and, consequently, unpredictable, Commercial Conservation Fees are not included in the table. At full build out, these fees would be in excess of $151,000 each year. All monies collected through Annual Conservation Fees and Deed Transfer Conservation Fees will be designated and earmarked for the conservation program only.

Table 5. Conservation Funding by Phase*.

Year No.	Phase	Estimated Completion Date	New Residential Units	Deed Transfer Fee ($100 per sale)	Total Residential Units	Annual Conservation Fees ($100 per unit)	Harris Ranch Ltd. Voluntary Underwriting	Total by Year
1	1	2009	0	0	0	0	20,000	20,000
2	1	2009	0	0	0	0	30,000	30,000
3	1	2009	124	$12,400	124	0	27,600	40,000
4	2	2010	149	$14,900	273	12,400	22,700	50,000
5	3	2011	96	$9,600	369	27,300	23,100	60,000
6	4	2012	129	$12,900	498	36,900	20,200	70,000
7	5	2013	88	$8,800	586	49,800	21,400	80,000
8	6	2014	162	$16,200	748	58,600	15,200	90,000
9	7	2015	90	$9,000	838	74,800	16,200	100,000
10	8	2016	149	$14,900	987	83,800	1,300	100,000
11	9	2017	82	$8,200	1069	98,700	0	106,900
12	10	2018	108	$10,800	1177	106,900	0	153,200
13	11	2021	355	$35,500	1532	153,200	0	280,400
	**	2021	1272	$127,200	2804	280,400	0	407,600

* Commercial development to provide additional funds of $151,400 per year (Conservation fee = 10 cents per sf * 1,513,998sf).

** Dwelling units indicated in Harris Ranch Specific Plan, Land Use Development and Prototypical Block Charts not in Phasing Plan.

4.2 GENERAL NEIGHBORHOOD DESIGN

This section outlines recommendations that will avoid, minimize, or mitigate impacts that pertain to the neighborhood layout, design, or Covenants Codes and Restrictions (CCR). For the purposes of wildlife habitat planning, the proposed project is broken down here into three provincial areas: foothills, floodplain, and riparian areas. This classification occurs generally along a north-south gradient in the proposed project area. The foothills region is in the northern portion of the area, the Boise River floodplain is in the middle, and the majority of riparian areas occur along the southern reaches of the project area. There are some scattered riparian areas in the foothills region associated with Warm Springs Creek and Maynard Creek (see Figure 5).

4.2.1 Foothills

Construction proposed to take place in the foothills above the floodplain and pastures represents the largest threat to big game winter habitat. The lower elevation reaches of the Boise Foothills are the final destination for big game winter migration, especially during severe winters. Therefore, any development that takes place in the Foothills represents further permanent encroachment and disturbance in crucial winter range, eliminating available space and restricting big game winter use to smaller areas. These impacts would be substantially increased during severe winters when larger numbers of big game need to utilize lower elevation Foothills habitat for forage and shelter.

Foothills development will be focused in the lowest elevation areas nearest to the floodplain and pastures. Housing will be clustered and condensed towards the mouth of Warm Springs Creek and along the Foothills front, visible from Warm Springs Road. Proposed “fingers” that result in small, narrow areas of open space between parcels are basically unusable for big game and other wildlife species due to increased direct human interaction and the small scale of the open space. Houses will be enveloped together in a connected matrix, concentrating open space areas to the northern and northeastern side of the Foothills property. Natural open spaces in the foothills will be a focal point for neighborhood conservation and habitat enhancement efforts (See Section 4.3 for habitat enhancement).

4.2.2 Valley Bottom/Floodplain

The majority of development would occur in this area. The floodplain is a mixture of agricultural land, developed lands, and wetlands. Resource Systems Inc. (2006) defines jurisdictional wetlands as a:

> *…wetland that may be considered jurisdictional by the U.S. Army Corps of Engineers and would likely require permitting under Section 404 of the Clean Water Act. The precise definition of jurisdictional wetland is currently uncertain because of a recent U.S. Supreme Court ruling (Rapanos v. United States, June 19, 2006) that will probably result in changes in the jurisdictional definitions in the near future*

Resource Systems Inc. (2006) has reported the location and extent of jurisdictional wetlands, open waters, and questionable jurisdictional wetlands within the proposed development and summarizes that:

> *The project would fill nearly 14 acres of areas that may be jurisdictional wetland. Most of the wetland proposed for fill are relatively isolated parcels and not associated with the Boise River. The project proposed to create or enhance between 25 and 30 acres of wetland that would be adjacent the Boise River and directly contribute to connectivity and habitat values. The wetlands created would have potential for developing forested and shrub habitat. The habitat would be created to allow the connection of a side-channel creek to the Walling Ditch potentially improving the Boise River fishery. The project intends to create truly functional Class-A habitat in an area that currently has little, if any, functional, high-value habitat.*

The creation of wetland habitat at Harris Ranch would off-set those lost by development. Wetland enhancement efforts along the Boise River would improve the wildlife habitat value of some wetlands that are in a degraded condition. Section 4.3.2 outlines some of the tools that will be used in wetland enhancement projects. Section 5.0 displays the site specific plan for wetland mitigation efforts.

All wetlands incorporated into the neighborhood design will be appropriately buffered from development. The purpose of buffers is to protect wetland functions from detrimental impacts created by adjoining land use, either existing or expected. In general, the scientific literature on buffers is clear and consistent in that there are three primary factors that are critical in determining adequate buffer widths: (1) type of wetland and functions it provides; (2) type of adjacent land use; and (3) characteristics of the buffer (McMillan 2000). Appropriate buffer widths vary according to desired buffer function(s). Because there are no target species for the existing or planned wetlands, there are no regulations or guidelines for buffer width (R. Brochu, Army Corps of Engineers, Personal Communication, April 2007). However, buffers larger than 50 feet are necessary to protect wetlands from an influx of sediment and nutrients, to protect wetlands from direct human disturbance, to protect sensitive wildlife species from adverse impacts, and to protect wetlands from the adverse effects of changes in quantity of water entering the wetland (Castelle *et al*. 1992). Wetlands at Harris Ranch will be buffered from residential or commercial development at a minimum distance of 50 feet. This does not preclude establishment of walking paths and overlooks for recreational and/or educational use.

Herbicide and chemical spraying will be restricted within the designated buffers to protect associated species, primarily amphibians such as the northern leopard frog, as well as western and Woodhouse toads. Chemical spraying within wetland buffers will only be done by licensed pesticide applicators under the direction of the Conservation Director.

Marianne Williams Park, an approximately 55-acre public park is planned to be added at the western boundary of the project area (Figure 12), along the north side of the Boise River and south of Warm Springs Road. A series of wetlands and ponds will be incorporated into the design of this park in an effort to provide suitable habitat for wildlife who currently utilize existing wetlands in the area of development. Wetlands and ponds in the park would ideally be located along the Boise River, acting as a natural buffer restricting human disturbance to wildlife along the river. This wetland matrix will provide a suitable area for local great blue herons which have a communal nesting area on the direct opposite side of the river.

The process of constructing this public park will likely require the clearing existing dense vegetation. A large quantity of young black cottonwood trees currently reside within the proposed park boundaries and would likely be removed. Those young cottonwood trees will be transplanted upstream along the trout spawning channel and close vicinity. Transplanted cottonwoods will provide nest, roost, and perching habitat for a variety of avian species in both the short and long-term. In a worst case scenario, the cottonwood trees may not survive the transplanting process. Even so, standing dead cottonwood snags will provide desirable habitat for woodpeckers, sapsuckers, kingfishers, and various other bird and wildlife species.

Figure 12. Concept Plan for Marianne Williams Park (The Land Group 2006).

Riparian Areas

Similar to wetlands, these areas will be targeted as buffered areas and potential habitat enhancement sites. The Boise River will be buffered from the Greenbelt by at least 200 feet and buffered from road construction and other development by 300 to 500 feet. The importance of riparian corridors has been illustrated previously in the document as areas where higher levels of biodiversity occurs, as well as serving as migratory avenues for various types of wildlife. Development walking paths will be restricted from riparian areas and not encroach past the highest point of the bank. The Boise River, Warm Springs Creek, Squaw Creek, and other drainages capable of supporting riparian vegetation will be targeted for enhancement with appropriate willow and shrub species, as well as rushes, sedges, grasses and riparian forbs. Consultation with the local state or federal agency riparian specialists will be conducted to ensure that appropriate vegetation is used during riparian enhancement projects. Figure 13 displays how riparian areas will be buffered at Harris Ranch.

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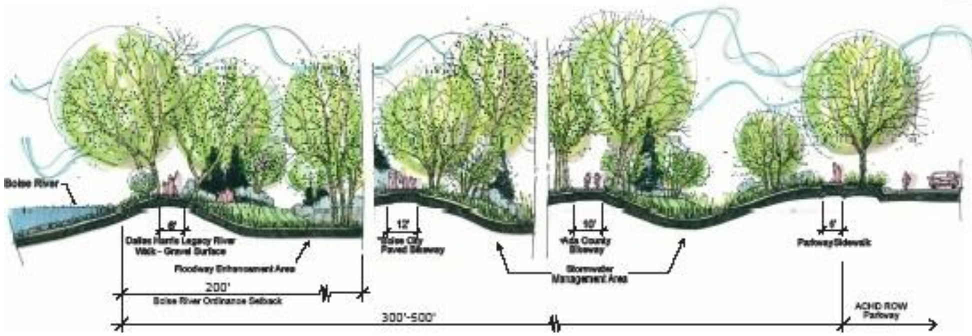

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4.2.3 Warm Springs Road

A significant source of mule deer mortality at HR occurs as a result of vehicular collisions along Warm Springs Road. In an effort to reduce mule deer mortality and risks to motorists, speed limits along Warm Springs Road should be reduced to 30-35 mph from Warm Springs Mesa to Highway 21. HR does not control speed limits on Warm Springs Road, however, increased development will likely prompt speed reductions in the area, indirectly benefiting wildlife.

A series of round-a-bouts will be incorporated into the design of HR to further reduce excessive speeding and subsequent mule deer road kill (Figure 18). This action could reduce mule deer mortality from road kill, but it will not eliminate it altogether. In the event of road kill along Warm Springs Road and Highway 21, some of the carcasses could be used to provide a carrion source for local wildlife. Mule deer road kill could be distributed at appropriate locations in the foothills.

A significant opportunity to improve Warm Springs Road with regard to big game and other wildlife crossing issues exists in the form of Idaho Transportation Department Enhancement Grants. Available grant monies can be used in a variety of ways minimize problems associated with wildlife and road crossings at HR; these improvements can include, but are not limited to: improving fencing to be more compatible with wildlife, increased warning signs and lighting, and the removal of Jersey barriers. HR will team up with a partner agency (IDFG, ITD, etc.) to apply and receive money in an effort to make Warm Springs Road more wildlife compatible. Refer to Appendix D for more information regarding ITD Enhancement Grants.

4.2.4 Fuel Break (greenstrip) and Hydrant Locations

Portions of Harris Ranch are located in the foothills and will present a wildlife/urban interface. Annual grass species (e.g., cheatgrass and medusahead wild rye) are often the dominant vegetation in areas of the foothills where Harris Ranch exists. During summers following a particularly wet spring, these annual grasses can increase fuel loadings beyond that which is typical for the native sagebrush-grassland complex, producing potentially hazardous fuel situation. Harris Ranch recognizes the hazards inherent in developing residential communities wildland/urban interface and will implement measures to prevent the spread of wildfire in the foothills and enhance resident safety.

Fire is a potential during the summer in the foothills; however, the threat is especially high from July to September when the moisture levels are low, vegetation is fully grown and dried out, and recreational use is greatest. The HRCD will take steps to prevent or inhibit large-scale wildfires from spreading that will result in human danger, property damage, or the further establishment of exotic annual grasses and the degradation of wildlife habitat. In an effort to reduce this potential, a fuel break (or greenstrip) will be constructed in strategic areas of the undeveloped foothills within HR to prevent wildfires from spreading into the foothills (Figure 14).

Greenstrips are long, narrow bands vegetation that arranged in such a way to starve a spreading wildfire of fuel. Alternative fuel breaks known as brownstrips can also include gravel, rock, or pathways, which will also serve as a barrier to wildfire. These strips can reduce the rate of wildfire spread and in some instances stop it. Plants growing in a greenstrip are low growing, widely spaced, and retain a high moisture content late into the growing season.

Greenstrips at Harris Ranch will be constructed along the northern boundaries of the development. Greenstrip width depends on fire prevention objectives, topography, and soils. Pellant (1999) indicates a minimum of 30 ft. in the Birds of Prey National Conservation Area (NCA). Greenstrips at Harris Ranch will be a minimum of 50 feet wide because slopes are steeper than those in the NCA. Greenstrips will consist of those species that have been used with some success in the region (Pellant 1999), including: crested wheatgrass (*Agropyron cristatum*), forage kochia (*Kochia prostrata*), alfalfa (*Medicago sativa*) and Siberian wheatgrass (*Agropyron sibiricum*). All greenstrips will be monitored annually for weeds and treated with herbicide if necessary. Refer to Appendix E for a description of fuel break and greenstrip construction, and potential funding mechanisms pertaining to hazardous fuels and wildland urban interface.

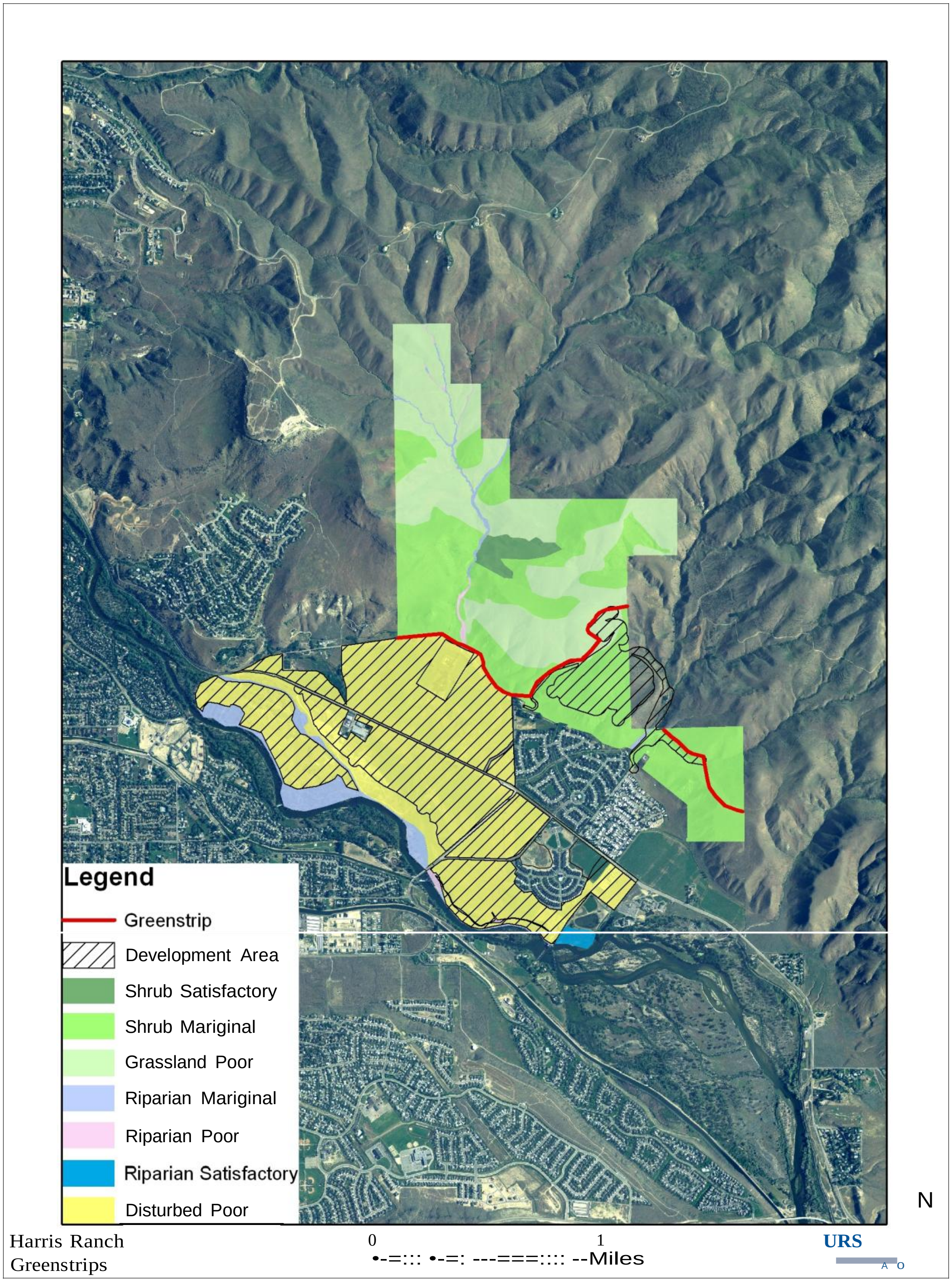

Figure 14. Greenstrip Locations.

Perimeter Fire Hydrants

A series of fire hydrants will be strategically located along the Foothills perimeter to provide fire hose access to neighborhood water in the event of a wildfire near HR. Hydrant hose attachment threading would be compatible with local city, state, and federal hose attachments to facilitate quickness and efficiency in the event of a fire in the Foothills. Exact locations cannot be determined at this time due to the conceptual nature of the Harris Ranch development plan. The HRCD, IDFG, City of Boise, and BLM could coordinate opinions and appropriate locations and styles for perimeter hydrants.

4.2.5 Neighborhood Wildlife Fencing

The fencing provisions below will be enforced through ordinance which HR will codify upon approval by the City of Boise. Fence design and construction will be reviewed by the Conservation Director to ensure wildlife friendly fences are constructed at HR.

Residential/Higher Density Areas

Fencing in residential areas will prevent wildlife injury and mortality by preventing wildlife from entering yards from which they cannot escape. Residential fences will be at least six feet high and will be constructed of a highly visible material (e.g. wood or vinyl). The bottom of the fence will be in contact with the ground. This will prevent big game from jumping into backyards from which they cannot escape. Residential privacy fences will be solid with no vertical spacing to prevent big game from getting their heads caught between slats. The top level of residential fencing will be free of protruding objects that could impale crossing wildlife. Wrought iron and chain link fences (except for dog runs in enclosed backyards) will not be constructed. Deer and elk jump with their hind legs forward, so if the fence is chain link their legs can get caught resulting in injury or death

Property Boundaries and Aesthetic Fencing

Fences in open space areas of the development that are adjacent to the Foothills will likely be places that big game species enter and exit the development. Fencing will be avoided in these areas. Fencing in areas that may be crossed by big game will be regulated by CC&Rs to provide wildlife friendly fencing.

The priority for wildlife-suitable fencing in open areas is (1) easy passage and (2) low risk of injury or death. Fences that accommodate wildlife passage will be no higher than 40 inches and will be avoided on slopes greater than 25 percent (Colorado Division of Wildlife 2005). Fences with horizontal rails or wires will provide spacing of at least 12 inches between the top two cross members and 18 inches between the lower cross member and the ground. The top level will not have any protruding objects or rails that could potentially impale crossing wildlife. Fencing along road corridors will be minimized to reduce road kill.

4.2.6 Wildlife Watering Sites (Guzzlers)

The Idaho Department of Fish and Game has determined guzzlers are not needed in the Boise Front and would be of limited value to wildlife (E. Leitzinger, IDFG, Personal Communication April 2007) in or near the project area. Consequently guzzlers will not be included as part of wildlife and habitat enhancement actions.

4.3 HABITAT MITIGATION AND ENHANCEMENT

Harris Ranch understands the importance of relatively large blocks of open space to wildlife in the area. The development was designed with this in mind and has concentrated the bulk of development in a clustered area along the Barber Valley. In order to avoid as much as possible impacts to wintering big game, the development plan leaves large blocks of upland habitat in the foothills undeveloped. These areas will be the focus for habitat improvement projects, aimed at improving forage and cover for resident and migratory big game species.

In addition to on-site habitat restoration projects, Harris Ranch will utilize portions of the Conservation Fund for offsite habitat mitigation. Starting in Year 1, and continuing in perpetuity, 10 percent of the Conservation Fund will be committed to offsite mitigation to benefit wildlife winter habitat in the Boise Foothills. The specific mitigation actions will be determined by the Authoritative Oversight Committee. Offsite mitigation will focus on the species impacted by HR and in the area of the habitat loss and in accordance with IDFG's mitigation policy (IDFG 1991). Examples of acceptable mitigation include, but are not limited to (1) facilitate the permanent protection of off-site habitats in the Boise Foothills (e.g. conservation easement, purchase, land exchange, etc.), (2) facilitate habitat enhancement efforts on any protected off site parcels. These funds shall not be used for the purchase of capital equipment.

This 10 percent may be adjusted upward if demonstrated that this amount is insufficient to achieve its primary purpose of offsite mitigation or downward if the fund accrues money surplus to its needs. The decision to adjust the fund shall be made by the AOC. In addition, if funds are insufficient to secure a valuable piece of wildlife habitat and if time is a factor, the AOC may, at their discretion, have the option of using surplus funds from the general conservation fund. Only funds surplus to the primary purpose of that fund (i.e. implementing the wildlife mitigation plan) could be used. The AOC may also apply conditions on the use of that money (e.g. it must be paid back over several years, it can only be used for conservation easements – not purchase, etc.) These additional funds can only be used for offsite mitigation related to the direct and indirect impacts of the Harris Ranch Development on fish wildlife and their habitats.

Habitat enhancement projects that improve degraded habitat in the foothills, wetlands, or riparian areas into suitable preferred habitat would reduce some of the negative impacts resulting from permanently converting or eliminated open space in other areas of the property. This section describes some of the tools and strategies that the Conservation Director would use to implement habitat enhancement projects in the uplands at Harris Ranch. Specific habitat enhancement projects are indicated in Section 5. Appendix F is a contact list and funding opportunities regarding habitat enhancement and volunteer support.

Wildlife habitat objectives will be measured in terms of percent cover of favorable plant species. Restoration will be geared toward improving big game winter range in the foothills. Wetland construction and enhancement projects in the floodplain will be geared toward migratory birds including bald eagles, great blue herons, fish, amphibians, and small mammals.

Habitat enhancement will take a holistic approach with the goal of meeting all the standards for healthy rangelands set by the US Bureau of Land Management (USDI 1997). Therefore, all habitat restoration projects at Harris Ranch will be achieving or making significant progress towards the Idaho Standards for Rangeland Health by the target completion dates identified in Tables 7-9.

- Standard 1 – Watersheds will provide for the proper infiltration, retention, and release of water appropriate to soil type, vegetation, climate, and landform to provide for proper nutrient cycling, hydrologic cycling, and energy flow.

- Standard 2 – Riparian-wetland areas are in properly functioning condition appropriate to soil type, climate, geology, and landform to provide for proper nutrient cycling, hydrologic cycling, and energy flow.
- Standard 3 – Stream channels and floodplains are properly functioning relative to the geomorphology (e.g., gradient, size, shape, roughness, confinement, and sinuosity) and climate to provide for proper nutrient cycling, hydrologic cycling, and energy flow.

- Standard 4 – Healthy, productive, and diverse native animal habitat and populations of native plants are maintained or promoted as appropriate to soil type, climate, and landform to provide for proper nutrient cycling, hydrologic cycling, and energy flow.

- Standard 5 – Rangelands seeded with mixtures, including predominately non-native plants, are functioning to maintain life form diversity, production, native animal habitat, nutrient cycling, energy flow, and the hydrologic cycle.

- Standard 6 – Exotic plant communities, other than seedings, will meet minimum requirements of soil stability and maintenance of existing native and seeded plants. These communities will be rehabilitated to perennial communities when feasible cost effective methods are developed.

- Standard 7 – Surface and ground water on public lands comply with the Idaho Water Quality Standards.

- Standard 8 – Habitats are suitable to maintain viable populations of threatened and endangered, sensitive, and other special status species.

4.3.1 Foothills Enhancement Projects

The Conservation Director will be responsible for implementing all habitat enhancement projects. The overall goal of enhancement projects in the foothills is to restore the potential natural plant community on all dedicated natural open space in the foothills within the Harris Ranch project boundary. This plan recognizes that not all lands are capable of achieving the potential natural plant community due to historic land use. In this case, the closest approximation of the potential natural plant community will be restored.

Foothills enhancement projects will attempt to restore those plant communities identified by the United States Department of Agriculture, Natural Resource Conservation Service (NRCS) as the potential natural plant community. The Ada County Soil Survey contains ecological site descriptions for discrete locations throughout Harris Ranch. Each ecological site description contains a list and percent composition of those plant species which an area can potentially support. Enhancement goals are based on percent cover of a those plant communities considered favorable in each area. Progress will be determined based on the increase in percent foliar cover of those plants indicated by the NRCS as part of the potential plant community. See Appendix J for a detailed list of upland vegetation that may be used in foothills restoration projects. Review of the NRCS ecological site descriptions for the Harris Ranch indicates several plant species that are common throughout the upland habitats. The most common species are listed below:

<u>Shrubs</u>

- big sagebrush (*Artemisia tridentata*)
- antelope bitterbrush (*Purshia tridentata*)
- rabbitbrush (*Chrysothamnus spp.*)

Grasses

- bluebunch wheatgrass (*Pseudoroegneria spicata*)
- needle and thread (*Stipa comata*)
- bottlebrush squirreltail (*Elymus elymoides*)
- Sandberg's bluegrass (*Poa secunda*)
- basin wildrye (*Leymus cinereus*)

Forbs

- arrowleaf balsamroot (*Balsamorhiza sagittata*)
- firecracker penstemon (*Penstemon eatonii*)
- wild onion (*Allium acuminatum*)
- Lupin (*Lupin spp*.)

Restoration goals are based on the habitat classifications identified under Section 2.2 of this plan. The terms good, satisfactory, marginal, etc. are tied to the TNC alpha codes to define a particular plant community composition. The compositions are unique to particular ecological site classifications identified by the United States Department of Agriculture, Natural Resource Conservation Service (NRCS). The ecological site descriptions composed by the NRCS indicate a potential plant community for any given area within Harris Ranch which will represent the site specific restoration goal. Harris Ranch recognizes that certain areas are no longer capable of reaching the potential natural plant communities indicated by NRCS.

The following section describes some of the many tools and techniques that the Conservation Director can use to restore the potential plant communities in the foothills. In doing so, wildlife habitat will be enhanced. The overall goal of enhancement projects in the foothills will be to recover the potential native plant community appropriate for each soil type while providing forage and cover values for wintering big game. Chapter 5 provides measurable targets for habitat enhancement projects in the foothills according to a phased approach.

Approach

Nearly all natural open space in the foothills within HR will be enhanced. Planting or transplanting native species associated with the natural potential community, such as bitterbrush, sagebrush, perennial bunch grasses, forbs, and riparian species (depending on the location) will provide usable habitat for a variety of wildlife species and initiate a transition in the structure and function of native plant communities. Previous restoration projects in similar habitat types have shown that installing a palatable variety of shrubs and bunchgrasses increased deer, elk, and pheasant utilization after three years (Monsen 2004). A restoration team including a natural landscaping contractor, native species specialist, and the HR Conservation Director will coordinate resources for all enhancement efforts.

Restoration of uplands must involve treatments appropriate to the site. The Conservation Director will determine the best methods for restoration. Passive restoration may include removing livestock grazing pressure or recreation pressure from an area. Sometimes just letting an area regenerate naturally will result in natural restoration over a period of time. This method is always preferable because it allows the land to undergo natural succession and is less expensive than other techniques. The target area must have some component of the native plant community present for passive restoration techniques to work. If there is no seed source for native plants, or excessive erosion has occurred, or invasive plant species are entrenched, active restoration techniques must be employed to initiate a transition at the target area. The Conservation Director will not make the mistake of applying invasive treatments in an area that already have desirable vegetation with the idea of improving it when there is a chance the restoration treatments will kill the desirable vegetation that exists already. Sites that have limited amounts of desirable vegetation are better candidates for restoration.

Initial mitigation measures will primarily be associated with reduction and control of invasive and noxious weed species on and adjacent to the project area. A combination of mowing, prescribed burns, biological treatments, and herbicide applications in areas dominated by medusa head rye, cheatgrass, or rush skeleton weed is recommended. In areas with dense mats of medusa head wild rye, herbicide contact with the soil can be limited;

therefore, it is recommended that these dense mats be reduced through prescribed burns or some type of mechanical thinning. These types of treatments should significantly reduce mature populations and the amount and viability of seed for future generations. In areas with only limited components of invasive species present, spot-applications of herbicides, bio-control agents, or mechanical thinning should be used, while restricting prescribed burns. The use of herbicides should be determined based on a site-by-site basis. In addition, prescribed burns and herbicide applications will be done in collaboration with neighboring landowners, BLM, Ada County, IDFG, and other resource specialists.

After the initial reduction and control measures, enough time should be allowed for the herbicide to dissipate from the soil. After the herbicide has dissipated, the areas should be reseeded or planted with a mix of grasses, forbs, and some shrubs species. While native species are emphasized, the use of desirable non-native species could also be included for structural and functional components. It is highly recommended that these species either be sterile or non-aggressive; i.e. they will not out compete or displace more desirable native species. In addition, based on the limited success rate of shrub seedings and the amount of time needed to achieve a mature plant from seed, the shrub component will come primarily from rooted material, plugs, or transplanted individuals rather than seeds.

The seedings should be allowed to germinate and set for approximately one year based on seasonality and time constraints. The following year, plugs, super-cells, potted plants and transplants of a variety of grass, forbs, and shrubs should be added to the site in order to reestablish a diverse stand (both species diversity and age class diversity), of native or desired species. Planting and transplanting would occur in the spring and/or the fall, depending on the species and the local weather and soil moisture conditions. The use of live mature plants in addition to seedings and irrigation would likely increase the potential success rate of the project significantly in relationship to seeded only. In addition, live mature plants would be available for aesthetics and landscaping features, as well as functional and structural components of the system, i.e. soil stability, hydrologic function, and nutrient processing.

The following principles have been identified by land management specialists when restoring native vegetation in the uplands of sagebrush and grassland ecosystems (Monsen *et al.* 2004):

1. *The proposed changes for the plant community must be necessary and ecologically attainable.*
2. *The terrain and soil must support the desired changes.*
3. *Precipitation must be adequate to assure establishment and survival of indigenous and planted species.*
4. *Competition must be controlled to ensure that planted species can establish and persist.*
5. *Plant and manage site-adapted species, subspecies, and varieties.*
6. *A multispecies seed mixture should be planted.*
7. *Sufficient seed of acceptable purity and viability should be planted.*
8. *Seed must be planted on a well prepared seed bed and covered properly.*
9. *Plant during the season that provides the most favorable conditions for establishment.*
10. *Newly seeded areas must be managed properly.*

Techniques

Seeding operations should coincide with weed control or seedbed preparation treatments in order to take advantage of reduced competition from weedy plants. Therefore, selecting plant control methods that create or improve the seedbed are preferable. Mechanical control methods that disrupt the soil surface are also preparing a seedbed. However, drastic methods such as plowing may destroy a favorable seedbed. In order to apply and incorporate the seed all at once, chains or harrows may be dragged behind the seeding mechanism. If plant control measures are relied upon to cover the seed, the operation should be done when soils are tillable and proper planting depths are attainable. Winter is not a good time to drill seed for example, because the ground may be frozen, limiting the depth of planting.

Controlling Undesirable Plants & Preparing the Seedbed

Biological control agents include domestic livestock, insects, fungus, and even wildlife. Controlled grazing can benefit native species if monitored. High intensity short duration grazing of livestock can be effective at reducing seed production and stand density of cheatgrass but will not eliminate the annual grass. Further grazing is not recommended as a means to control cheatgrass in areas where the plant community is in poor condition because there is no source for native seed in these areas. There must be some remnant population of native plants to realize an increase in native species cover through grazing.

Fire is a natural disturbance factor that can initiate changes in the plant community over large areas. Fire is a selective disturbance event. Some plant species are better adapted to it than others. As a result, expect those species with shorter life cycles to recover from fire quickly. Herbaceous vegetation will increase over the short term after fire. Shrubs will take longer to recover. The first shrubs to appear after a fire will likely be rabbit brush. Sagebrush is easily killed by fire and should not be exposed to it. Bitterbrush may survive fire depending on the intensity of the burn. Burning may leave some surface litter which is helpful in seed bed preparation but is normally not sufficient for germination of seed. Additional seed incorporation techniques are usually required.

Herbicide is an acceptable means to controlling vegetation. Many herbicides are specific to certain types of vegetation. BASF, the manufacturer of Plateau™ have developed an herbicide that is specific to annual herbaceous vegetation (including cheatgrass) and does not harm perennial natives. Dow Agro Sciences has developed Tordon 22k™ which can be an effective treatment for broadleaved herbaceous weeds without harming native grasses. This can be used for noxious weed control because it is absorbed directly through the leaves and is persistent in the soil. Like burning, herbicide treatments may leave some surface litter which is helpful in seed bed preparation but is normally not sufficient for germination of seed. Additional seed incorporation techniques are usually required.

Mechanical Control utilizes machinery and personnel to control reduce weedy competition. Mowing can be an effective way to reduce the build up of cheatgrass and can reduce the seedbank of invasive grasses and forbs if done at the correct time of year. To reduce the seedbank of invasive grasses like cheatgrass, mow when seed is in the dough stage, before the seed cures and drops to the ground. The cheat grass begins to display a purplish color during this stage. Plowing and disking are another means of killing existing vegetation but can also be used to prepare a seedbed. Mowing may not create a favorable seedbed since it does not disturb the soil.

Disk Harrow

Disks and plows are designed to remove existing vegetation and prepare a seedbed. There area several types available. The smooth anchor chain may be dragged across an area in order to uproot vegetation and scarify the soil surface. The chain links weigh 40 to 160 lb per link and are 90 to 150 feet long. Two tractors drag the chain in a U shape across the treatment area. This method will kill sagebrush and is not recommended in areas where shrubs exist. The disk harrow employs a single row of disks mounted onto a frame that is hauled by a tractor. The method reaches deeply into the soil, controlling deep rooted plants. Disk plows are restricted to fairly rock free areas and require large amounts of energy to operate. They can treat large swaths of area and operate best on flat terrain.

Anchor Chain

The pipe harrow is a set of spiked pipes which are trailed behind a spreader bar. The pipes are attached to the spreader bar with swivels that allow them to turn. The pipe harrow is an excellent choice for interseeding because the pipes can be drug between desirable patches of shrubs. The harrow will scarify the soil surface and cover seed. The cost of

Pipe Harrow

operation is low relative to disking or chaining and this method will work well on rocky or uneven terrain.

Seed Application

The rangeland drill is used by the BLM and the USFS to restore large tracts of land. There are many types of drills available; each has the ability to place seed at a certain depth into the soil. Some drill seeders have depth bands that allow the operator to regulate the depth at which the seed is placed to allow for optimal germination. Most species should be seeded about ¼ to 3/8 inches deep. Drills being pulled uphill will generally set seed deeper than on level ground. Keep this in mind when setting depths. Some drills have the capacity to seed up to three species at a time. Drill seeding creates a small furrow where moisture accumulates that is beneficial for seed germination. The rangeland drill is preferable in areas that have burned or lack any native shrubs that could be killed by the equipment.

Drill Seeder

Broadcast seeding gets seed mix on the ground in a uniform pattern. This method does not incorporate the seed into the soil so additional scarification of the soil surface is required. The method may be preferable to drill seeding in areas where remnant native vegetation exists that may be damaged by a rangeland drill. Broadcast seeding generally requires more seed than drill seeding. Approximately 33 to 50 percent more seed is recommended for broadcast seeding (Monsen 2004). Seed may be broadcast from the ground or from the air. Aerial seeding is an option for seeding remote areas or when vast areas are being treated. Broadcast seeding on top of snow over disturbed soil can be a successful seeding practice.

Broadcast Seeder

A no-till drill seeder can be an effective way of preparing a suitable seedbed, controlling competition from the established vegetation, and broadcasting seed without major destruction to the landscape. The no-till drill seeder poses less risk of erosion than disking and plowing because less soil is disturbed. This method should be used on slopes greater than 15 percent. Disking and plowing should not be used on slopes greater than 15 percent to avoid erosion. The John Deere Poewr-Till Seeder© uses power-driven cutter wheels to cut through the sod and prepare a seedbed three-fourths inch to one inch wide and three-fourths inch to two and one-fourth inches deep. The fluted force-feed seed-volume metering system is ground driven. Pack wheels firm the soil above the seed. A sprayer attachment can be affixed to the equipment to apply liquid herbicide in bands of variable width ahead of the cutter wheels provided weed control.

No-Till Drill Seeder

Sites with slopes or two-to-one or better, will have an unstable soil condition and be to steep for heavy equipment. Restoration projects on steep slopes will employ a hydroseeder which will apply a slurry of native plant seed, mulch, and a powdered organic glue tackifier to get plant material on the ground while reducing the potential for serious erosion. The slurry blanket is formulated to break down by microbial action and exposure to the sun, yet it will last a number of months to ensure even revegetation while resisting erosion at the surface. Today's on-the-ground equipment makes it possible to discharge various formulations more than 1,000 ft. from a parked truck. It takes a special progressing cavity pump for distances exceeding 1,000 feet through the hose. Where hydro seeding is not possible due to slope restrictions, restoration projects will be performed by hand.

Planting Desirable Vegetation by Hand

Planting desirable vegetation by hand is possible and can be advantageous when trying to establish shrub communities. Sagebrush, gray rabbitbrush, and antelope bitter brush starts are available locally and will be utilized throughout the enhancement stages at Harris

Ranch. Salvaged plants will also be utilized where possible to retain as much local genetic stock as possible. Even bunchgrass species are available as starts and will also be utilized at Harris Ranch. See Section 5 for application rates and cost. Appendix J provides a price schedule of potted shrubs (1 gallon) and grasses (super cells).

Figure 15. Volunteers Planting Sage and Bitterbrush in Foothills near Harris Ranch (Fire Rehabilitation at the Homestead Fire). Volunteers planting with the IDFG above Harris Ranch in the Squaw Creek Drainage (Blades 2006).

Irrigated Enhancement

Restoration efforts can sometimes benefit from irrigation during establishment. However, native plants are adapted to the local moisture regime and should not be over-watered. Irrigation will only be applied in the uplands if water is determined to be a limiting factor in establishing plant materials. Limited irrigation can facilitate increased establishment and growth rates of desired native species but should be discontinued after establishment to prevent the spread of weeds. Speeding up the growth and success rates of restoration plots may provide preferred wildlife habitat and a higher carrying capacity over a shorter time frame than without irrigation. The restoration team will need to work with community landscape architects and planners to provide adequate water sources for drip-line or sprinkler, or other means of irrigation. Coordination with local wildlife and ecology specialists from state and federal agencies will also provide insight into successful projects and methods.

Drip-line irrigation will be utilized in the foothills if necessary because it can be localized to specific areas and is capable of providing only limited amounts of moisture. Species that may be irrigated include all those that may be limited by an abnormally low water year. If the Conservation Director determines that certain species are being limited by water, they may decide to apply irrigation. If irrigation takes place, it will take place in the spring (March-April) and fall (October-November), replicating the natural cycle. Drip irrigation has shown to be an effective treatment for establishing native plants in arid climates (Bean 2004), and can dramatically increase the chances for successful plantings (USDA 2004).

4.3.2 Wetland Construction and Enhancement

Wetland and riparian areas that can be targeted for habitat enhancement are identified in Section 8.0 of this report. There will be no net loss of wetland and riparian areas at Harris Ranch (Resource Systems Inc. 2006). Harris Ranch is prepared to provide wetland mitigation under guidance provided by the U.S. Army Corps of Engineers (ACOE) and Environmental Protection Agency through Section 404 of the Clean Water Act. The wetland mitigation plan prepared for and accepted by the ACOE will be incorporated into this plan as an appendix.

Wetland mitigation at Harris Ranch will involve restoration of existing wetlands or construction of an entirely new wetland area. These two options are different and will be considered carefully before embarking on any wetland mitigation efforts. Wetland restoration involves returning an existing wetland to a previous state. Wetland construction involves conversion of an upland site into a vegetated wetland area. Wetland restoration is often the less costly of the two because even degraded wetlands display the three wetland characteristics naturally: hydrology, hydric soils, and wetland vegetation. The following principles have been identified by wetland specialists for wetland restoration and construction projects (Mitsch and Gosselink 2000) and will be observed during wetland restoration and construction projects at the HR:

1. *Design the system for minimum maintenance. The system of plants, animals, microbes, substrate, and water flows will be developed for self-maintenance and self-design.*

2. *Design a system that utilizes natural energies, such as the potential energy of streams, as natural subsidies to the system. Flooding rivers…transport great quantities of water and nutrients in relatively short time periods, subsidizing wetlands open to these flows.*

3. *Design the system with the hydrologic and ecological landscape and climate. Floods, droughts, muskrats, geese, and storms are expected disturbances and will not be feared. Natural ecosystems generally recover rapidly from natural disturbances to which they are adapted.*

4. *Design the system to fulfill multiple goals, but identify at least one major objective and several secondary objectives. If a wetland is being created or restored to replace a lost wetland, replacement of function will be an important consideration.*

5. *Design the system as an ecotone. This may require a buffer strip around the wetland site, but it also means that the wetland site itself will be a buffer system between upland and aquatic systems.*

6. *Give the system time. Wetlands do not become functional overnight. Several years may pass before plant establishment, nutrient retention, and wildlife enhancement can become optimal and mature soils systems may take decades. Strategies that try to short-circuit ecological succession or over manage it are doomed to failure.*

7. *Design the system for function, not form. If initial plantings and animal introductions fail but the overall function of the wetland, based on fulfillment of*

initial objectives, is being carried out, then the wetland has not failed. The outbreak of plant diseases and the invasion of alien species are often symptomatic of other stresses and may indicate false expectations rather than ecosystem failure.

8. *Do not over engineer wetland design with rectangular basins, rigid structures and channels, and regular morphology. Natural systems will be mimicked to accommodate biological systems.*

Freshwater Marshes and Ponds

Some common emergent plant species used for wetland restoration and construction in areas where water accumulates and ponds will be useful at the HR. These species will include but won't be limited to: bulrush (*Scirpus* spp. and *Schoenoplectus* spp.), cattails (*Typha* spp.), and sedges (*Carex* spp.). Resources spent on submerged plants may be wasted since their establishment is often limited by algal growth and turbidity. See Appendix I for a detailed list of aquatic vegetation that may be used in wetland restoration projects.

Riparian Areas

Some common species used for wetland restoration along riparian areas in Idaho include black cottonwood (*Populus balsamifera*), willow (*Salix* spp.), river birch (*Betula occidentalis*), rushes and sedges. See Appendix I for a detailed list of riparian vegetation that may be used in wetland restoration projects.

Springs and Seeps

Many natural springs are located throughout the Boise Foothills and the BRWMA above HR. HR will develop a spring restoration program that will work towards repairing degraded and disturbed springs within the BRWMA and elsewhere in the Boise Foothills. Many of these springs were developed at some point in history, and have since fallen into disrepair and aren't functioning to their full potential. Restoration activities will include simply removing old rusted pipes and allowing a spring to flow freely. The benefits of spring restoration in the BRWMA will be realized in two ways: (1) better functioning springs will provide a more adequate water and forage source for big game species, promoting use higher in the foothills rather than moving towards the valley bottom and the community; and (2) enhancing spring ecosystems to provide habitat for increased levels of biodiversity at each spring location.

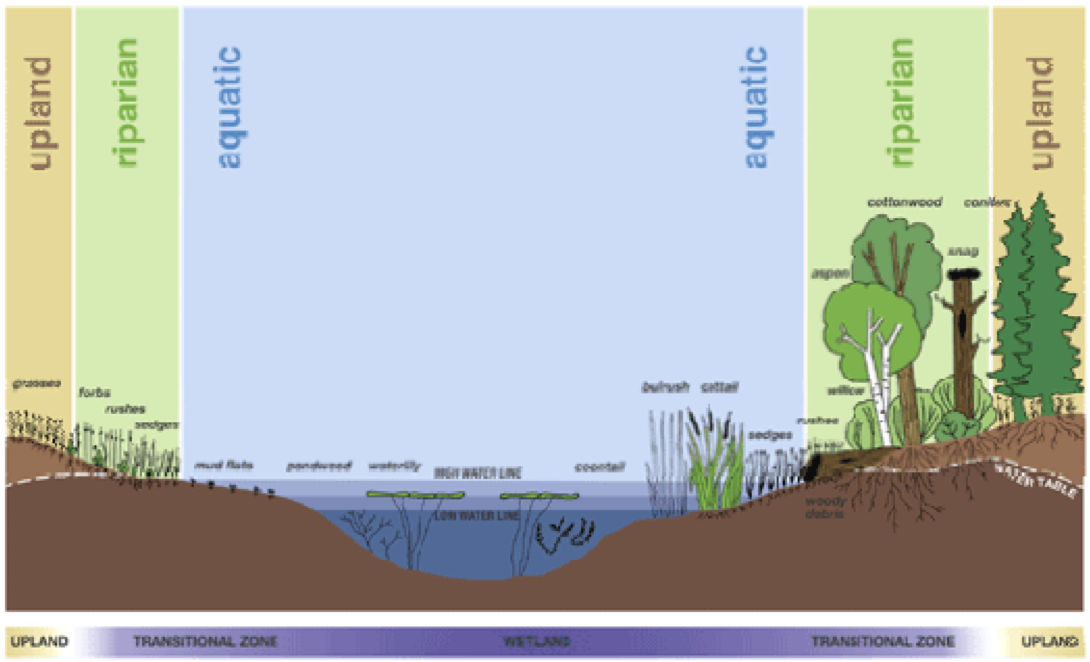

Figure 16. Relationship Between Aquatic, Riparian, and Upland Vegetation.

Wetland creation efforts have been initiated at Harris Ranch already. Similar efforts in the future will be accompanied by any number of the bioengineering methods described below. These methods provide channel stability with the added benefit of providing wildlife habitat. Mesh plastic or wire tubing helps protect new seedlings from browsing damage. These can be installed before or after planting ($0.30-$0.60/tube). Consideration will be given to the location of plantings. High spring flows through the Boise River could have the potential to wash away restoration plantings.

One option for the natural regeneration of Harris Ranch riparian habitat is the management of beaver in the system. Beaver are native to the area and beaver activity in the proposed project site is evident. Harris Ranch will encourage beaver activity to the extent that it does not inundate developed areas or degrade restoration efforts. The beaver's tendency to increase riparian habitat through dam construction would be beneficial for riparian vegetation, fish, amphibians, and songbirds that utilize riparian habitats. The Harris Ranch Conservation Director will be responsible for beaver management. The Conservation Director will carefully monitor stream channels for dam frequency, location, and debris piles near culverts. Trapping and relocation may become necessary to manage beaver activity. The Conservation Director will work with the Idaho Department of Fish and Game to assure proper handling and transfer of all trapped wildlife at Harris Ranch.

Bioengineering Methods

Wattles/Fascines

Wattles are bundles of live, woody material tied into bundles, generally 4 to 12 inches in diameter and typically 8 feet long. They will be placed in shallow trenches on banks or slopes parallel to the stream contour. They will be partially covered with soil. Wedge-like dead stakes will secure them into place at 2 to 3 foot intervals. This live-rooting material grows into a live fence-like erosion barrier. The wattle and the trench create a sediment trap. Straw mulching the site after installation will retain moisture and reduce surface erosion. This is the most functional and easiest to install of the bioengineering materials.

Brush (branch) Layering

This technique utilizes a 2 to 4-inch layer of readily rooting live branches which are 0.25 to 0.5 inch in diameter and 3 to 6 feet in length. Brush (branch) layerings will be planted on terraced benches with two-thirds of the basal material covered with soil. Six to 12 inches of upper growth will be exposed. Before installing, soil terraces can be additionally protected by putting down geo-fabric. Secondary layers of live branches are added 3 to 4 feet from the bottom of the slope. Before growth begins, they will add stability and aid in moisture retention. Straw mulch may be used to provide additional moisture retention and erosion control.

Brush Mattressing

This technique utilizes live, woody material 0.5 to 3-inches in diameter, at random lengths. This material is placed 4 to 6 inches deep on sloped areas. Generally starting at the bottom of the slope, they are laid in a crisscross pattern protecting 6 or more feet of slope. They are held in place with wedge-like dead stakes and secured with string or wire. Four inches of loose soil is placed on top to sufficiently cover the majority of the branches. The brush mattressing will act as an immediate sediment trap and grows into a shrubby carpet-like protective barrier. This technique is effective on slopes with a 2:1 ratio or flatter.

Live Cuttings

Cuttings are living plant material of unrooted, woody stems that will root and establish shrubs in wet, fertile conditions. They are ideal for planting in mass where erosion control and bank stability are an immediate concern.

Live Whips

Live whips are woody shrub material 0.25 to 1 inch in diameter and 4 feet to 6 feet long. Live whips are used in conjunction with gabion walls, riprap and geo-fabrics. Two-thirds to three quarters of live whips will be covered with soil. Whips can be installed laying on their side or erect in the soil. Live whips must be long enough to reach soil behind or below hard structures.

Rooted Cuttings and Bareroot Plants

Plants have 8 to 36 inches of above-ground growth and established roots. They are used to establish shrubs and trees on restoration projects. These materials are to be planted 2 to 8 feet apart and their roots must be covered with soil. See list of available species above.

Wedge-like Dead Stakes

These are pieces of wood cut in long wedges. They measure 1.5 by 3 inches by 2.5 feet long. These dead stakes are driven into the soil to secure wattles, brush mattressing, and other applications of soil bioengineering.

4.3.3 Noxious Weed Abatement Plan

Noxious weeds will continue to be an ongoing issue at HR due to established infestations, initial construction ground disturbance, increased population, and recreation levels. The HRCD will obtain a professional or private land pesticide applicators license and will be responsible for implementing the following weed abatement plan. Weed Management Goals will match the objectives of the adjacent BRWMA (IDFG 2004), and will include but are not limited to:

A. Control the spread of noxious and undesirable weeds at Harris Ranch, try to prevent new infestations, map existing locations, and keep record of species present.
B. Monitor the effectiveness of control measures and adapt control efforts as necessary.
C. Attend local and county weed control meetings to keep informed of latest techniques and methods for controlling weeds.
D. Meet state and federal safety guidelines for the use of herbicides and prescribed burning (if applicable).
E. Coordinate with Ada county weed supervisors as well as state and federal agencies as appropriate on weed control and mapping.

The following noxious weed abatement plan will be implemented by the Conservation Director for all areas within HR. The following plan for noxious weed abatement follows the model set forth by the Ada County Comprehensive Noxious Weed Plan. HR hopes to provide support to Ada County weed managers by couching the Harris Ranch Noxious Weed Abatement Plan to the Ada County Plan. The first priority of weed management at HR will be to establish weed management zones. All areas of HR will be placed into one of four noxious weed management zones:

- Zone 1 – Potential New Invaders Identified: There are no known infestations of the specific noxious weed in this designated zone and the target species will be treated as a potential new invader. Emphasis will be placed on an education, awareness, identification, recognition and monitoring program to prevent introduction.

- Zone 2 – New Invaders Exist: These are very limited infestations of specific noxious weeds in this zone and the target species will be treated as a new invader. Emphasis will be placed on a community-wide eradication and extensive monitoring program.

- Zone 3 – Widespread but Limited Infestations Exist: The infestations of the specific noxious weed in this designated zone will be treated as small enough that reducing the stand or the vigor of the infestation is achievable. Emphasis will be placed on area-wide control with the ultimate goal as being eradication.

- Zone 4 – Established Infestations: The infestation of the specific noxious weed in this designated zone will be treated as being so well established that eradication is impractical and uneconomical. Various treatment alternatives will be utilized to control and contain the target species. Specific sites or rights-of-way will be designated within this zone for receiving special treatment considerations. Emphasis will be placed on Integrated Pest Management, resident education, and participation.

A specific set of policies and guidelines will direct the approach to managing weeds within each of the weed management zones. The policies and guidelines for each zone are presented below:

Noxious Weed Management (Zone 1)

1. Record source of weed species from other areas where potential introduction may occur.
2. Identify possible avenues or methods of introduction into the community.

3. Conduct weed tours and educational and awareness programs to alert construction crews, residents, land management agencies and the general public to be on the alert for these weeds.
4. Identify appropriate quarantine and exclusion procedures.
5. Utilize the University of Idaho's plant identification program for verification of suspected newly introduced weed species.
6. Once a new weed is confirmed in the area, reclassify it to an appropriate category (II, II, IV) utilizing the noxious weed management program.

Weed control in Zone 1 areas will include education, awareness, identification, recognition and monitoring to prevent introduction(s) into the community. Noxious weed update meetings will be convened by the Conservation Director annually to update residents on the types of weeds to look for, how to identify noxious weeds, and where to report new occurrences. In addition, the Conservation Director will publish a list of those noxious weeds present in and around the community for distribution to all residents of the HR.

The Conservation Director will inspect all reports of weeds in this zone within two days of the reported observation. Further, the Conservation Director will conduct on going inspections monthly during the growing season to identify new weed infestations. All new infestations will be mapped and logged into a data base for future reference and inspections.

Noxious Weed Management (Zone 2)

1. Target species confirmed in HR.
2. Identify extent of infestation(s) and boundaries.
3. Determine accessibility of infestation(s).
4. Determine feasibility of eradication, monitoring and treatment capabilities.

Noxious weed eradication is the goal in all Zone 2 areas. Weeds will be considered eradicated if the target noxious weed species is absent from the zone for a period of two (2) years. The Conservation Director will inspect all reports of weeds in this zone within two days of the reported observation. Further the Conservation Director will conduct ongoing inspections of Zone 2 areas for any new weed infestations. When a new infestation occurs it will be mapped and logged into a data base for future reference and inspections.

Community newsletters giving facts for the HR will be published and distributed as often as possible. Education will help residents identify early life stages of the weed species in these areas through annual noxious weed abatement meetings and/or brochures and pamphlets. Personal contact and consultation with the Conservation Director will be made for each homeowner with an infestation in this category.

Noxious Weed Management (Zone 3)

1. Determine that under existing programs the target species cannot be eradicated in two years due to the large number or size of infestations.
2. Determine extent of infestations.

Control will be community-wide to reduce the vigor and stand of the infestation with the ultimate goal being eradication. Integrated methods of control will be incorporated, including, but not limited to, agreements with and extensive landowner participation and monitoring. Weed Complaints will be inspected within two working days of the complaint and processed as any other infestation within the respective category. The Conservation Director will conduct on going inspections of the county for the purposes of identifying new weed infestations in this category.

Infestations will be mapped and logged into a data base for future reference and inspections. Each homeowner with weeds in this category present on their parcel will receive consultation by the Conservation Director on how best to control the weeds.

Community newsletters giving facts for the HR will be published and distributed as often as possible. Educational community meetings set up by the Conservation Director will help residents identify early life stages of the weed species in these areas. Personal contact and consultation with the Conservation Director will be made for each homeowner with an infestation in this category.

Noxious Weed Management (Zone 4)

1. Determine the extent of infestation(s).
2. Determine that target species cannot be eradicated within two years.
3. Determine containment possibilities.
4. Determine identifiable and defensible boundaries.
5. Determine technical, economical and manpower considerations.
6. Determine environmental and wildlife considerations.
7. Determine integrated weed management principles to be utilized.
8. Determine appropriate zones.

Control treatments will be alternatives ranging from no action to several levels of integrated noxious weed management, including prevention, eradication, restoration.

4.4 RECREATION

Recreation poses one of the largest potential negative impacts to local wildlife in the vicinity of HR. Open space areas do not necessarily imply that it is open for all types of recreation. The HRCD will assess new and existing recreation uses to analyze and ensure compatibility with wildlife. Recreation types that are not compatible with wildlife objective of the BRWMA will be restricted. The IDFG has an obligation to provide public access and use compatible with the protection and enhancement of wildlife and wildlife habitat. This does not include all forms of recreational use during all times of the year. Wildlife is the first priority of the BRWMA and HR residents need to be educated to understand this fact. The HCRD will maintain an ongoing relationship with the Foothills Learning Center, IDFG, and BLM (all incorporated agencies and groups) in an effort to manage and monitor recreational uses in the Foothills.

The Conservation Director will assess how new and existing recreation uses affect wildlife and ensure that such uses are compatible with wildlife in general by monitoring recreation intensity, frequency, and duration at Harris Ranch. Should the monitoring reveal easily avoidable adverse impacts to wildlife, a recommendation will be made to the AOC. The AOC will determine the actions necessary to address the issue. Actions may include, but are not limited to, trail closure, restriction of certain types of recreation, timing restrictions, seasonal closure of an area, interpretive signage. The HOA will extend its authority to the Conservation Director to issue citations to those residents who do not comply with the CCRs. The Conservation Director will become an agent of the HOA with the authority to enforce the provisions of this Plan.

4.4.1 Winter Closures

All trails at HR in the Boise Foothills will be closed from January 1 through March 31. This time of year represents the highest potential for negative impacts on wildlife, especially big game species, and subsequently will be completely off-limits to recreational use. This will be a flexible timeframe that is adjusted in conjunction with IDFG closures of the BRWMA and annual winter severity fluctuations. The HRCD will be responsible for educating and informing the public of the timeframes and reasoning behind trail closures.

4.4.2 Trails

A strict policy will be enforced regarding recreational trail use in the open spaces of the Foothills surrounding HR. All recreational users will be required to stay on trails when in the Foothills. This will restrict negative impacts to a buffer zone around the trails, and prevent the creation of alternate and new trails. If the Conservation Director observes citizens recreating in the foothills off established trails, a verbal warning will be issued first. The Conservation Director can issue a citation under the authority of the HOA to offenders who blatantly ignore the policy on recreational trail use. Refer to Appendix C for further discussion on how the Conservation Director will enforce the provisions of this Plan.

4.4.3 Pets

The HRCD will maintain involvement with local agencies and groups that host workshops on the potential conflicts and issues resulting from the presence of dogs in the Foothills. IDFG is not responsible for depredations that occur resulting from the development. For the safety of wildlife and pets alike, dogs will be leashed or fenced at all times. Cats can decimate populations of birds and small mammals. They can also become prey to some wildlife species. Cats will be required to be kept indoors or to wear bells on their collars. Pet food will be required to be stored indoors or in a sealed container. Pet food will not be left outside. Refer to Appendix C for further discussion on how the Conservation Director will enforce the provisions of this Plan.

4.4.4 Idaho Power Corridor

Recreation and public use of the Idaho Power Corridor should be restricted to established and designated trails. Leashes should be required for all pets at all times throughout the community to minimize the harassment of wildlife.

5.0 MITIGATION AND MONITORING PLAN AND SITE SPECIFIC ACTIONS

Harris Ranch embraces the opportunity to mitigate for wildlife damages and habitat loss due to development. Not only are several voluntary habitat enhancement projects (including conservation easements) either in place, in progress, or planned (see Section 6), but Harris Ranch has established a mechanism to ensure both on- and offsite mitigation in perpetuity.

Harris Ranch recognizes the Idaho Department of Fish and Game's policy to seek compensation for unavoidable losses of fish and wildlife habitat or populations by acquisition and improvement of similar offsite habitat near the project area. Harris Ranch also recognizes the importance and benefits to wildlife of onsite habitat enhancement. Consequently, the Mitigation Plan contains elements of both on- and offsite mitigation.

Offsite Mitigation

Ten percent of the Conservation Funds collected as deed transfer fees, homeowners' annual fees, and commercial property annual fees will be dedicated, in perpetuity, to off-site mitigation to benefit wildlife winter habitat in the Boise Foothills. The specific mitigation actions will be determined by the Authoritative Oversight Committee (AOC). Offsite mitigation will focus on the species impacted by HR in the area of the habitat loss and in accordance with IDFG's mitigation policy (IDFG 1991). Examples of acceptable mitigation include, but are not limited to, (1) facilitate the permanent protection of off-site habitats in the Boise Foothills (e.g. conservation easement, purchase, land exchange, etc.), (2) facilitate habitat enhancement efforts on any offsite parcels. These funds shall not be used for the purchase of capital equipment.

This 10 percent may be adjusted upward if demonstrated that this amount is insufficient to achieve its primary purpose of offsite mitigation or downward if the fund accrues money surplus to its needs. The decision to adjust the fund shall be made by the AOC. In addition, if funds are insufficient to secure a valuable piece of wildlife habitat and if time is a factor, the AOC may, at their discretion, have the option of using surplus funds from the general conservation fund. Only funds surplus to the primary purpose of that fund (i.e., implementing the wildlife mitigation plan) could be used. The AOC may also apply conditions on the use of that money (e.g., it must be paid back over several years, it can only be used for conservation easements – not purchase, etc.) These additional funds can only be used for offsite mitigation related to the direct and indirect impacts of the Harris Ranch Development on fish wildlife and their habitats.

Because habitat enhancement actions are site specific, the actions to improve habitat which has yet to be identified are unknown. However, because the offsite habitat acquired will be nearby Harris Ranch, and presumably in similar habitat condition, the techniques identified for habitat enhancement onsite most likely will also be used offsite.

Onsite Mitigation

Onsite mitigation will include enhancement and creation of wetlands, conservation easements, buffers (wetland, and riparian), riparian protection and improvement, and rehabilitation of foothills habitat. In addition, the development includes parks, natural areas, greenbelt, and other green sites beneficial for numerous wildlife species, particularly neotropical migrant birds.

The footprint of Harris Ranch at full build-out will include approximately 457 acres of valley floor and 115 acres of foothills. Approximately 75 acres of open space, as un-developed parkland and other green space, are included in the valley floor footprint. There are approximately 790 acres of open natural space in the foothills. This includes 80 acres in the Bizek holding and nearly 80 acres of uplands within the Idaho Power Transmission Line Corridor; both parcels will be part of the Harris Ranch onsite habitat enhancement efforts (Chapter 4). Onsite habitat enhancement will target nearly 90 acres of valley floor and all of the unfragmented areas (approximately 750 acres) of foothills habitat. Habitat enhancement efforts will be by phases, coupled to the phases of development. Much of the valley floor habitat is the site of former commercial ventures and in a significantly degraded ecological condition (TNC Habitat Condition Code E: *Native stand composition, structure, and function are significantly altered. Re-establishment of native stand composition, structure and function will require large energy inputs*). The habitat in the foothills identified for restoration is mostly rated poor (TNC Habitat Condition Code E), with less than less than 70 acres considered marginal (TNC Habitat Condition Code D: *Evidence of post-industrial human-caused disturbance is prevalent. Stand composition and structure is altered. Native species are present, but in peril of loss. Increasers dominate the stand. Invader species are a significant compositional component*). The minimum habitat enhancement goal for all onsite efforts, including riparian areas, is to achieve a satisfactory condition (TNC Habitat Condition Code C: *Post-industrial human-caused disturbance is apparent. Stand composition structure is altered. Exotic species are well represented to abundant [5-25% cover]*). While this might appear to set the bar too low, it must be recognized that (1) a change in habitat condition from Code E to C is indeed a significant improvement and benefit to wildlife and (2) there are few places in Idaho where rangeland has < 5% exotic cover.

In all cases restoration and enhancement activities will be adaptive. Monitoring success and recognizing failures will enable the most efficient use of funds and produce results within the limitations of the existing conditions. Flexibility is one of the greatest virtues when planning and implementing restoration activities. Monitoring is necessary before, during, and after implementation to determine effectiveness of restoration. The locations, techniques, and costs for restoration projects are outlined below by phase. All mitigation actions should be considered long-term investments, with associated long-term funding and monitoring. Each enhancement effort will be treated like a case study, consequently providing lessons learned for future efforts. The following list will be the general approach during all phases of restoration:

- In areas with only limited components of invasive vegetation present, spot-applications of herbicides, bio-control agents, or mechanical thinning will be used. The initial and continued use of herbicides will be determined based on a site-by-site basis.
- The use of live mature plants in addition to seedings and irrigation will likely increase the potential success rate of the project significantly in relationship to seeds only. In addition, live mature plants will improve aesthetics, landscaping

features, and provide functional and structural components of the system. (i.e., soil stability, hydrologic function, and nutrient processing).

- Spot spraying of invasive grass species in areas with established native species will likely reduce competition for limited resource and increase the ability of young natives to establish and reproduce. However, the use of herbicides can have adverse affects on native species as well; therefore, mechanical and biological controls will be used as much as possible.
- Biological control agents have been used as a way to reduce the spread of noxious and invasive vegetation. Biological control agents will be utilized to the greatest extent possible in order to control invasive and noxious weed species. Biological control will not eradicate weeds entirely. They will only reduce weed vigor and rate of spread. Therefore, mechanical and chemical treatments will also be necessary. While invasive and noxious weed species can be reduced with chemical and mechanical treatments, these require significant amounts of time and resources, and can result in adverse impacts to remnant native population. Some bio-control agents are species specific and have limited affects on other species. Others should not be used in areas where native vegetation could be impacted. In addition, these treatments are less time and resource consumptive, and can affect a very large area with a minimal application.
- The general approach for weed treatment will employ multiple treatments throughout the year and be dependent on factors including: 1) the magnitude and extent of the infestation, 2) the target species, 3) time of year, 4) proximity to sensitive resources (cultural sites, aquatic habitats, remnant native plant populations, etc.). Mechanical and biological treatments will be emphasized near aquatic habitats that may be adversely impacted by herbicide.
- Herbicides utilized at Harris Ranch may include but will not be limited to: Plateau™, Round-up™, Oust™, and Tourdon 22k™.

5.1 HABITAT MITIGATION PHASING

Habitat enhancement activities at the HR will occur in a series of three phases and shall be carried out as development activities occur in an effort to offset habitat loss. Habitat mitigation efforts described in this section will include plans for uplands and wetlands. Noxious weed abatement will be carried forward throughout all phases of this plan.

The *mitigation phases* described in this section are distinct from, but tied to, the *development phases* shown in the Harris Ranch Development Phasing Plan (Figure 4). Mitigation activities outlined in this section occur within the Harris Ranch boundary. Table 6 shows the relationship between mitigation phases and development phases.

Table 6. Development Phases and Mitigation Phases at Harris Ranch.

Development Phase	Completion Date	Mitigation Phase	Acres	Completion Date
Phase 1	2009	Phase I	100 Upland 59 Wetland/ Riparian	2013
Phase 2	2010			
Phase 3	2011			
Phase 4	2012			
Phase 5	2013	Phase II	121 Upland 31 Wetland/ Riparian	2018
Phase 6	2014			
Phase 7	2015			
Phase 8	2016			
Phase 9	2017			
Phase 10	2018	Phase III	525 Upland	2022
Phase 11	2021			

Section 4.0 of this report identifies some of the techniques that will be used for habitat restoration. This section provides a detailed prescription for achieving specific habitat enhancement goals. The prescriptions are not, however, immutable. The restoration process will be flexible and able to adapt to unforeseen circumstances such as limited supply of materials, drought, site specific limitations, and pests.

The three mitigation phases are illustrated in Figure 17. Acres to be enhanced and date of completion are displayed in Tables 7, 8, and 9. Harris Ranch recognizes that habitat restoration efforts will never reach a fixed endpoint. Rather, once a restoration goal is met, habitat monitoring and maintenance will be ongoing. The Conservation Director will be responsible for maintaining habitat restoration projects beyond the completion dates indicated for each phase of habitat restoration.

The monitoring plan will be a key component of the adaptive management approach that this plan emphasizes. The AOC will meet once each year to review the progress of onsite habitat enhancements. The AOC will have the ability to revise the strategies, locations, and extents of onsite habitat enhancement projects identified in this plan depending on the success or failure demonstrated by annual reports put together by the Conservation Director. In addition, should onsite habitat enhancement prove ineffective after a concerted effort has been made over time, the AOC may, as an alternative to further onsite habitat mitigation, pursue increased offsite mitigation through utilization of the offsite conservation fund (Section 4.3). The AOC may also amend this Wildlife Mitigation Plan annually to include new tools and technologies that may not be addressed in this version. The AOC must review this plan for relevancy at least once every five years.

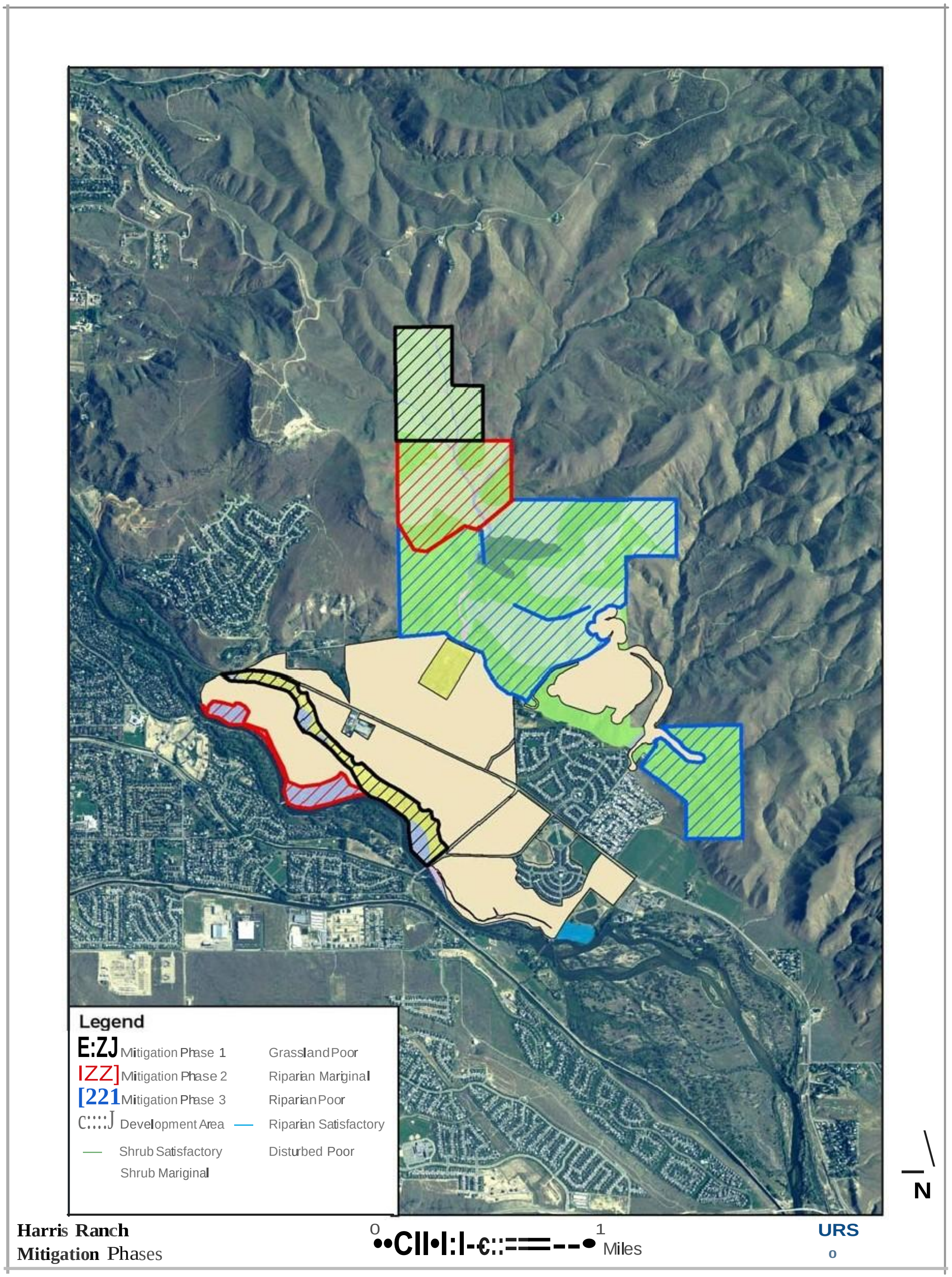

Figure 17. Mitigation Phases at Harris Ranch.

5.1.1 Phase I

The objective for habitat restoration in Phase I is to enhance 100 acres of upland habitat presently in poor condition in the foothills and to construct and/or restore 59 acres of wetland/ riparian habitats in the valley. The goal for restoration is to achieve a satisfactory habitat condition class rating (TNC Code C) or better on all treated areas within 5 years of implementation. Table 7 provides estimates of the materials, application rates, labor, start dates, completion dates, and costs to initiate progress toward the goals.

Table 7. Cost and Timeline for Phase I Restoration Actions.

Mitigation Goal	Materials (Unit Cost)	Application Rate	Quantity	Start Date	Completion Date	Estimated Cost
Enhance 100 acres of foothill habitats to Satisfactory condition (TNC Code C)	Mechanical removal of litter buildup & seedbed preparation.	N/A		September 2009	September 2012	
	Labor = $60/hour		130 hours			$7,800
	Equipment = $750/season		4 seasons			$3,000
	Herbicide (Plateau = $2.14/oz.)	8 oz./acre (Plateau)	800 oz. (Plateau)	October 2009	October 2012	$1,712
	Labor = $60/hr		41 hours			$2,460
	Equipment = $750/season		4 seasons			$3,000
	Upland seed mix (Appendix J) $9/lb	12 lbs/acre	1,200 lbs	November (early) 2009	November (early) 2012	$10,800
	Labor = $60/hr.		41 hrs			$4,260
	Equipment = $750/season		4 seasons			$3,000
	Native plant materials – live potted shrubs ($6.26 ea.)	40/acre	4,000	November 2011	November 2012	$25,040
	Installation = $1.20/plant					$4,800
Construct and enhance wetland/ riparian habitat on 59 acres	Wattles and Facines ($5/lineal foot for 6-8 in diameter)	Walling Ditch = 3,280 ft.	1 per lineal foot	September 2008	September 2009	$16,400
	Labor = $40/hour		177 hours			$7,800
	Equipment = $750/season		4 seasons			$3,000
	Riparian Seed Mix = $49.50/lb (Appendix I)	4 lbs/acre	236 lbs.	October 2009	October 2010	$11,682
	Labor = $40/hour		60 hours			$2,400
	Equipment = $750/season		3 seasons			$2,250
	Whips and Plugs = $1.20/plant	100 plants/acre	5,900 plants	April 2010	April 2012	$7,080
	Installation = 1.20/plant					$7,080
Total						**$123,564**

5.1.2 Phase II

The goal for habitat restoration in Phase II is to restore 128 acres of upland habitat (i.e. foothills), and 31 acres of wetland/ riparian habitat. The objective for restoration is to achieve a satisfactory habitat condition class rating (TNC Code C) or better on all treated areas.

Table 8 provides estimates of the materials, application rates, labor, start dates, completion dates, and costs to initiate progress toward the goals.

Table 8. Cost and Timeline for Phase II Restoration Actions.

Goal	Materials (unit cost)	Application rate	(Qty.)	Start Date	Completion Date	Estimated Cost
Enhance 128 acres of foothill habitats to Satisfactory condition (TNC Code C)	Mechanical Removal of annual grass litter & seedbed preparation.			September 2012	September 2017	
	Labor = $60/hr.		166 hrs.			$9,960
	Equipment = $750/season		5 seasons			$3,750
	Herbicide (Plateau = $2.14/oz)	8 oz./acre (Plateau)	1,024 oz.	October 2012	October 2017	$2,191
	Labor = $60/hour		50 hours			$3,000
	Equipment = $750/season		5 seasons			$3,750
	Upland seed mix ($9/lb) (Appendix J)	12 lbs/acre	1,536 lbs.	November 2012	November 2017	$13,824
	Labor = $60/hour		50 hours			$3,000
	Equipment = $750/season		5 seasons			$3,750
	Native plant materials – live potted shrubs ($6.26 ea.)	40/acre	5,120 plants	September 2013	September 2017	$35,051
	Installation = $1.20/plant					$6,144
	Native plant materials – super cells ($1.45 ea.)	100/acre	12,800 plants	September 2016	September 2017	$18,560
	Installation = $0.40/plant					$5,120

Table 8. Cost and Timeline for Phase II Restoration Actions.

Goal	Materials (unit cost)	Application rate	(Qty.)	Start Date	Completion Date	Estimated Cost
Construct and enhance wetlands/ riparian habitat on 31 acres	Wattles and Facines ($5/lineal foot for 6-8 in diameter)	Boise River = 2,250 ft	1 per lineal foot	September 2013	September 2016	$11,250
	Labor = $40/hour		121 hours			$4,840
	Equipment = $750/season		4 seasons			$3,000
	Riparian Seed Mix = $49.50/lb (Appendix I)	4 lbs/acre	124 lbs.	October 2013	October 2016	$6,138
	Labor = $40/hour		31 hours			$1,240
	Equipment = $750/season		4 seasons			$3,000
	Whips and Plugs = $1.20/plant	100 plants/acre	3,100 plants	April 2014	April 2016	$3,720
	Installation = $1.20/plant					$3,720
Total						**$145,008**

5.1.3 Phase III

The goal for habitat restoration in Phase III is to restore 525 acres of upland habitat (i.e. foothills). The objective for restoration is to achieve a satisfactory habitat condition class rating (TNC Code C) or better on all treated areas.

Table 9 provides estimates of the materials, application rates, labor, start dates, completion dates, and costs to initiate progress toward the goals.

Table 9. Cost and Timeline for Phase III Restoration Actions.

Goal	Materials (unit cost)	Application rate	(Qty.)	Start Date	Completion Date	Estimated Cost
Enhance 525 acres of foothill habitats to Satisfactory condition (TNC Code C)	Mechanical Removal of annual grass litter & seedbed preparation.			September 2018	September 2022	
	Labor = $60/hr.		681 hrs.			$40,860
	Equipment = $750/season		5 seasons			$3,750
	Herbicide (Plateau = $2.14/oz)	8 oz./acre (Plateau)	4,200 oz.	October 2018	October 2022	$8,988
	Labor = $60/hour		214 hours			$12,840
	Equipment = $750/season		5 seasons			$3,750
	Upland seed mix ($9/lb) (Appendix J)	12 lbs/acre	6,300 lbs.	November 2018	November 2022	$56,700
	Labor = $60/hour		214 hours			$12,840
	Equipment = $750/season		5 seasons			$3,750
	Native plant materials – live potted shrubs ($6.26 ea.)	40/acre	21,000 plants	September 2018	September 2022	$131,460
	Installation = $1.20/plant					$25,200
	Native plant materials – super cells ($1.45 ea.)	100/acre	52,500 plants	September 2017	September 20120	$63,000
	Installation = $0.40/plant					$21,000
Total						**$384,183**

5.2 MONITORING PLAN

This HR Monitoring Plan is a method for determining the success of restoration efforts at the HR. Restoration goals are identified above in the restoration goal tables under each phase of the HR and serve as the endpoints for restoration. This monitoring plan is aimed at determining the change in the canopy cover ratio of native and exotic plant species within each treatment area. Monitoring will measure the change in native plant canopy cover

over time. Canopy cover can be thought of as the percentage of a certain area covered by native plants from a bird's eye view.

Monitoring techniques will determine the effects of restoration according to the criteria set forth in the stated goals; that is, <25% cover of exotic species within a functional native plant community. The following techniques will be utilized to gather data and make determinations as to the success of restoration projects.

The HR Monitoring Plan will employ the photo trend plot monitoring method and the line intercept method. These two methods produce visual (*qualitative*) data, and percent canopy cover (*quantitative*). Data gathered at each plot will be representative of the restoration treatment applied in that area. Plots are established according to the size of the treatment area, type of treatment, and continuity of the existing plant community. One plot will be established in areas where the plant community retains similarity for twenty acres or more. At least one plot will be established in a given treatment area. More than one plot may be established where the plant community differs or where treatments differ.

Plots must be established and read prior to any vegetation treatments in order to determine a baseline against which future data will be compared. Monitoring studies must be conducted at each monitoring plot annually during the growing season (from May to August). Each method should be conducted during the same annual visit.

5.2.1 Photo Trend Plot Method

This method produces annual photographs and sketches that occur within a permanent 3 ft.x3 ft. frame. Data can be compared over time to evaluate changes in the plant community as a whole.

Step by step instructions include:

- Install a permanent marker (= benchmark) at each monitoring location. This can be rebar or fence post, painted fluorescent orange.

- Identify the location of the marker in the field on a 7.5 minute USGS quadrangle map and record as a *waypoint* with a GPS receiver.
- Produce an azimuth (0° to 359°) randomly in the field using a random number table. Record this number in the monitoring file. The azimuth is a permanent number that does not change.
- Stand directly over the benchmark and face the determined azimuth. Place the photo trend plot frame (3 ft. by 3 ft.) on the ground so that the benchmark is tucked snuggly into the bottom left hand corner.
- Place a temporary stake on the upper right hand corner of the photo trend plot frame. The photo trend plot is now established.
- Take a photograph of the photo trend plot frame from directly overhead. Get the entire photo trend plot frame in the photograph. I
- Include a photo card in each picture that identifies a plot specific ID number and the date. Do not place the photo card in the frame as it will obscure the vegetation that occurs within the frame.
- Take another photograph facing the determined azimuth with the photo trend plot frame in the foreground of the picture. This is more of a landscape photograph. Painting the frame fluorescent orange will help distinguish it from tall grass and shrubs after pictures are developed.
- Sketch the photo trend plot frame on a sheet of paper and note the vegetation that occurs within it. Make the sketch from the bird's eye view perspective while standing directly over the plot and facing the determined azimuth. The benchmark should be in the lower left hand corner of the frame and the temporary stake should be in the upper right hand corner. Try to characterize the space (area) that each species occupies within the frame.
- Remove all frames and stakes but leave the benchmark in place so that the process can be repeated the following year.
- Develop the pictures (or print out digital photos) and place them a monitoring file with the sketch.

Before, during, and after photographs may be compared observing the amount and type of ground cover in each plot. Differences in plant community will be noticeable if restoration efforts are effective.

5.2.2 Nested Plot Method

This method utilizes a series of measuring tapes stretched across the landscape (transects) and a small frame (20 cm. x 50 cm.) placed at evenly spaced intervals along the transect to sample plant canopy cover. Percent cover by species may be compared over time to extrapolate an increase or decrease of native vegetation in the greater plant community. This method has proved satisfactory in sampling plant communities (Daubenmire 1968) before.

Step 1. Establish the base tape.

The base transect line should be 100 feet long and stretched straight across the landscape. Use the established benchmark as the 0 ft. marker and the randomly generated, plot specific azimuth as the direction to stretch the measuring tape. Place a temporary stake at the 100 ft. mark and use that stake to hold the base transect in place.

Step 2. Establish the five transect tapes.

Use a random number table in the field to select five numbers between 0 and 100. These five numbers represent intervals on the base tape where one of five transects will intersect. Stretch each transect line across and perpendicular to the base transect line at the randomly selected interval. Secure each side of the transect tape using stakes. The base transect line must bisect each transect line. The 50 ft. mark of each transect should occur along the base tape.

Step 3. Read the transect tapes.

Stand at the 0 ft. mark of the first transect tape. Place the small frame (20cm. x 50cm.) at the 5 ft. mark of the first transect. Always place the frame on the right hand side (when standing at the 0 ft. mark and facing the 100 ft. mark) of the transect tape. Place the frame so that the bottom right hand corner sits directly adjacent to the 5 ft. mark of the transect tape.

- Identify the plant species that occur inside the frame and record. Include those species that originate outside the frame but hang over it from the bird's eye view.
- Estimate the percent canopy cover by species within the frame and record. Again, include those species that originate outside the frame but hang over it.
- Estimate the percent of bare ground that occurs within the frame from the bird's eye view.
- Estimate the percent of litter that occurs within the frame.

Repeat this step at five foot intervals along the transect tape until you come to the end of the tape. At this point there should be data for twenty plots. Repeat step three for the other four transect tapes. Remove all tapes and stakes but leave the benchmark in place so that the process can be repeated the following year. Keep all data in a monitoring file.

This method will provide data on species diversity and percent canopy cover. These are the appropriate metrics for evaluating the success of enhancement efforts.

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6.0 VOLUNTARY CONSERVATION MITIGATION ACTIONS BY HARRIS RANCH TO BENEFIT WILDLIFE AND HABITAT

This Wildlife Assessment and Mitigation Plan has been structured to: (1) define the objectives and goals of a mitigation plan regarding the proposed Harris Ranch Planned Community; (2) describe the existing ecological conditions of the property and vicinity, as well as identify special status species that potentially inhabit the area; (3) identify potential direct and indirect impacts to wildlife and habitat that will result from construction activities and residents living and recreating in the vicinity; (4) provide a list of actions and options that will avoid, minimize, or mitigate potential impacts to wildlife and habitat; and (5) identify habitat enhancement and mitigation actions (both on- and offsite), funding mechanisms, time lines, measures of success, and alternate pathways if success is not achieved.

This section demonstrates the Harris Ranch commitment to wildlife and habitat conservation by outlining voluntary conservation actions that have been completed, are in progress, or are planned, which will take place at Harris Ranch for the benefit of wildlife and habitat. These actions are complimentary to the wildlife mitigation plan at Harris Ranch. The Applicant has agreed to the following:

- Employ a Conservation Director at Harris Ranch (job description attached as Appendix C). This position will initially be part-time for the first four years.
    - The Authoritative Oversight Committee (AOC) for this position shall be made up of a representative(s) from Idaho Fish and Game (1), US Fish and Wildlife (1), Idaho Conservation League (1) future Harris Ranch Homeowners Association (1), Owner/Developer representative (1), and a representative from the City of Boise. The AOC will be responsible for hiring and supervising the Full-time Conservation Director.
    - Funding for this position will initially come from the developer. As early phases are completed, funding will be provided by CC&R fees.

Conservation Impact Fee – $300.00 will be charged at the time of deed transfer for all property at Harris Ranch. Purchasers of property can be refunded two thirds ($200) of the fee by attending two conservation education classes and/or habitat enhancement volunteer activities approved by the Conservation Director of Harris Ranch. The aforementioned fee(s) will be adjusted on an annual basis using the Boise Area Consumer Price Index (CPI).

CC&R Conservation Fee – An annual charge of $100.00 per residence will be included in Homeowner Association CC&R fees. Commercial properties will be assessed ten cents ($0.10) per useable square foot of building on an annual basis. The aforementioned fee(s) will be adjusted on an annual basis using the Boise Area Consumer Price Index (CPI)

- The conservation fund will attain a minimum of $20,000 dollars in year one and will increase this amount $10,000 per year until a "plateau" of $100,000 per annum is reached for upland and/or riparian habitat enhancement projects. This will be on an annual basis and in perpetuity. Harris Ranch Family Limited Partnership will underwrite this commitment for the first ten years. The fund may accumulate a sum beyond $100,000 once enough residents and commercial square footage contribute to the funding stream (Table 5).

- With the exception of the 80 acres owned by Idaho Power, and 80 acres owned by the Bizeck Harris Ranch identifies all remaining undeveloped areas in the foothills (approximately 630 acres total acres) for voluntary conservation easements; the acres and timing of recording easements will be proportional to the phases of the development (Figure 3). It is possible that through negations the 80 acre Bizak holding may be available for conservation easement.

- Harris Ranch will be a cooperator in the Boise Foothills Cooperative Weed Management Area and East Foothills Project.

- Harris Ranch will voluntarily cluster and envelop housing near the lower foothills to maximize natural open spaces of the property foothills (Figure 3).

- Harris Ranch will buffer all riparian areas from the east end of Marianne Williams Park to Eckert Road more than the minimum 200 foot setback as required by the

Boise River Ordinance. The setback in this area will be 400 to 700 feet (Figure 13).

- Harris Ranch will conduct two wildlife education classes, at least one focusing on Raptors (specifically Bald Eagles) each year. Live specimens will be used whenever possible. Programs will also include game and non-game species.

- Harris Ranch will sponsor an annual barbeque for all participants volunteering in the annual IDFG seedling planting in the foothills. Harris Ranch hopes that this barbeque enhances the volunteer's experience and enrolls additional people from the community to participate. Harris Ranch is prepared to discontinue the barbeque at the discretion of IDFG and funnel those costs toward actual restoration efforts in the foothills (e.g. planting materials, tools, etc.).

- Harris Ranch will incorporate round-a-bouts into the design of the community to slow traffic and reduce deer collisions and mortality. At full build-out, there could be up to twelve round-a-bouts at Harris Ranch (Figure 18).

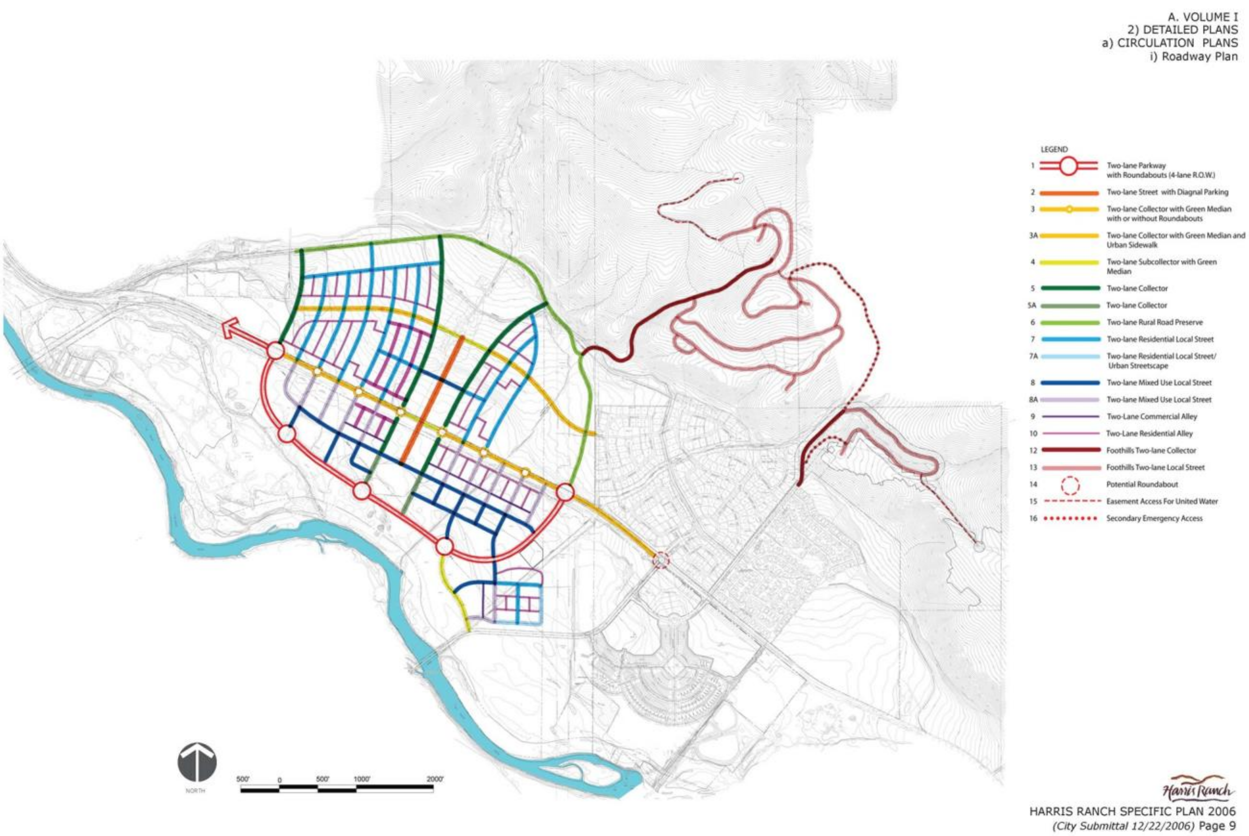

Figure 18. Round-a-bouts at Harris Ranch (Harris Ranch Specific Plan 2006).

- Harris Ranch will design and construct a fuel break for all development that is adjacent to, or within upland foothills habitats.

- Harris Ranch will restrict and/or eliminate the amount and types of fencing allowed in open and arterial areas of the community to minimize big game injury and mortality. The following types of fences will be prohibited on perimeter properties in Harris Ranch: spiked wrought iron, picket fences, chain link

- The Conservation Director will implement a rigorous noxious and invasive weed management program on the property.

- The Conservation Director will develop trailhead management objectives and actions, seasons of use, and access types (non-motorized). Resident education will be major component.

- The Dallas Memorial Walking Path will be closed seasonally from December 1st to March 15th to protect wintering bald eagle populations.

- 12 acre Natural Area by Barber Pool.

- Harris Ranch 3 acre Natural Preserve at Barber Pool. Development Prohibited.

- 9.5 acre Conservation Easement below Barber Dam to Idaho Foundation for Parks and Land

- Proposed 19 acre Dallas Harris Legacy Riverwalk Conservation Easement

- Signage and educational & informational kiosks regarding Bald Eagles and their habitat

- Tree planting: Barber Dam to East ParkCenter Bridge to screen the public from roosting eagles

- ~ 2 acre Alta Harris Creek Trout Spawning Channel Conservation Easement to Land Trust for Treasure Valley.

- Tree planting (willow and black cottonwood) along Alta Harris Creek

- Possible transplanting of medium-sized black cottonwoods scheduled to be removed during development to areas currently lacking perch trees

- Maynard Creek Conservation Easement (57 Acres; December 2006).

7.0 MITIGATION ACTION SUMMARY TABLE

Table 10. Wildlife Impacts and Resolution Actions.

Issue	Impact	Avoid	Minimize	Mitigate	Comment
Foothills Development	Conversion of open space. Diminishes big game winter range.	Build below foothills in pasture and agricultural lands only.	Cluster and envelope housing leaving increased foothills open space	Provide and/or enhance alternate winter range.	• Idaho Department of Fish and Game considers development in the foothills to be the most significant potential impact of any east-end development. • Eliminating foothills development (avoid) is not a financial option without some compensation to Harris Ranch
Wetland Conversion	Destroys functional wetlands; wildlife habitat loss (fish, waterfowl, songbird, amphibian, reptile)	Keep all development minimum 50 ft. from wetlands	Incorporate existing wetlands into design of community when feasible.	Construct additional wetland habitat or enhance existing wetlands in same area as impacted wetlands.	Wetlands will be avoided and incorporated into the development design when practicable. The proposed Marianne Williams Park provides opportunities for wetland enhancement and development. Enhancing developed springs in the BRWMA will improve ecological conditions and promote big game use at higher elevations.
Riparian Encroachment	Reduces crucial habitat and biodiversity	Buffer all riparian areas a minimum of 200 ft. from development	Berming and plantings between riparian habitats and development to reduce impacts.	Enhance other existing riparian corridors.	Riparian areas have been identified as primary movement corridors for several wildlife species
Warm Springs Road	Increased Traffic and elevated road kill		Incorporate round-a-bouts or stop signs to slow traffic		IDFG has identified speed limits and speed enforcement as the main cause of big game road kill along Warm Springs Road
Fuel Break or Greenstrip	Community Safety and reduction of wildfire spread potential.		Add fuel break around development areas that are adjacent to open space		Increase in recreational use of foothills will increase wildfire ignition potential. Hydrants add strategic water source for foothills fire fighting.
Fencing	Wildlife (primarily big game) injury or mortality. Blocking wildlife movement	Eliminate fencing in open and arterial development areas.	Restrict fencing in open and arterial development areas.		Mule deer impalement has been a reported problem in nearby residential areas due to certain types of fencing that adds risk to big game crossing.

Table 10. Wildlife Impacts and Resolution Actions.

Issue	Impact	Avoid	Minimize	Mitigate	Comment
Construction Noise	Deterrent to many wildlife species	Restrict construction during big game winter range and bald eagle nesting seasons.	Minimize louder construction types during big game winter range and bald eagle nesting seasons		Issues are easily avoidable with seasonal restrictions
Noxious/ Invasive Weeds	Habitat degradation and wildland fire risks		Implement rigorous weed management during construction and long-term		Should be a high priority long-term program at HR.
Pets	Wildlife harassment and mortality risks	Off leash pet areas will be located away from wildlife areas.	Leash, trail, and boarding rules and restrictions. Education about impacts. Promote use of common areas for pet activity.	Create designated pet common areas for off-leash use.	Wildlife impacts are easily avoided and reduced through regulation, resident education, and compliance.
Recreation	Wildlife harassment and habitat fragmentation		Seasonal restrictions and recreation rules combined with education	Develop trailhead management, seasons of use, and access types (non-motorized). Resident education	Wildlife impacts are easily avoided and reduced through regulation, resident education, and compliance.
Nuisance Wildlife	Wildlife mortality/ relocation. Resident interaction problems.		Educate residents about minimizing tactics and employ HRCD to rectify issues.		IDFG is not responsible for depredations resulting from residential development.
Big Game Disease	A higher concentration of big game facilitates disease transfer.			Enhance or restore degraded areas to increase amount of preferred winter range habitat.	

Table 11. HRCD Potential Scope of Work and Responsibilities (see Appendix C for a full description).

Actions	Description	Wildlife Benefits	Implementation Timeline
Harris Ranch Conservation Director (HRCD)	Full time position to manage all conservation programs and issues at Harris Ranch	Wildlife benefits will be described in specific actions and position responsibilities	Hired prior to construction phase. Ongoing position at Harris Ranch
Habitat Restoration	Implement habitat enhancement projects. Arrange acquisition of planting materials, tools, and resources. Consult and coordinate with appropriate agency reps. Oversee and participate in restoration work.	Increase habitat value in foothills by increasing available forage and cover. Increase habitat value in valley by increasing functional wetland habitat. Increased edge effect.	Habitat restoration will be ongoing at Harris Ranch. Section 5 includes a detailed timeline for all initial efforts.
Conservation Funding: Covenants, Conditions, and Restrictions	Ongoing $100.00 annual conservation fees associated with CC&Rs. Fee rate is an approximate value TBD at a later date.	Provide ongoing funding for the HRCD and conservation projects.	Implemented with CC&Rs at Harris Ranch. Ongoing.
Conservation Funding: Initial Purchase Conservation Fee	$100 (net) Deed Transfer conservation fee	Provide ongoing funding for the HRCD and conservation projects.	Beginning with any residential purchase at Harris Ranch. Ongoing.
Neighborhood Conservation Education	Resident conservation education conducted by HRCD. Conducted through various mechanisms.	Harris Ranch residents will understand wildlife use of the surrounding areas, human impact, and neighborhood regulations and rules	Ongoing program.
Fireworks (Part of neighborhood education)	All aerial fireworks should be restricted from the entire property. Develop a 'watch group' during the 4th of July to report violations.	Reducing the risk of large scale wildfires will protect residential and wildlife habitat areas.	Implemented with CC&Rs at Harris Ranch. Ongoing. Monitored by HRCD
Conservation/Wildlife Homeowners Video or Manual	Information provided upon purchase of a home, business, or local schools at HR.	Increasing avenues of information and education about wildlife and conservation issues.	Created ASAP. Distributed to every home, business, and potentially local schools.
Schools Conservation Education	Local school conservation education coordinated and implemented by HRCD.	Educating local children about wildlife and conservation in the foothills and along the Boise River.	Conducted annually at local schools.

Table 11. HRCD Potential Scope of Work and Responsibilities (see Appendix C for a full description).

Actions	Description	Wildlife Benefits	Implementation Timeline
Grant Writing Opportunities	The HRCD should investigate and apply for alternate funding sources for environmental education, conservation, and hazardous fuels reduction.	Supplemental funding for conservation programs at HR.	Conducted every year at Harris Ranch. Determined by the HRCD and grant deadlines.
Harris Ranch Conservation Website or link	Neighborhood conservation website (or link) that outlines all aspects of conservation issues, regulations, and efforts.	Ongoing information source for residents that outlines the entire conservation program.	HRCD to develop immediately.
Conservation Newsletter	Seasonal newsletter discussing wildlife and conservation issues, informing and encouraging participation in enhancement projects, and reminding residents about regulations and rules. A neighborhood email list should be maintained to provide this information digitally and also serve as a communication mechanism between residents and the HRCD.	Ongoing information source for residents that outlines the entire conservation program, with emphasis about seasonal issues.	HRCD to develop immediately
Interpretive Signs	HRCD determines appropriate locations for signs that describe wildlife use of the area, concerns, and regulations.	Educating residents and minimizing impacts to wildlife	HRCD works with developer and future homeowners association to incorporate signage into neighborhood design.
Rectifying Nuisance Wildlife Issues	Work with HR residents to deal with wildlife in the community. Coordinate with IDFG when needed.	Relocate wildlife to open areas and minimize mortality.	HRCD to begin immediately
Noxious and Invasive Weed Management	HRCD obtains a treatment license and maintains a noxious and invasive weed management program at HR.	Maintain open space habitat and reduce the establishment and spread of noxious species.	Obtain applicators license and coordinate effort with local weed management agencies and organizations.

Table 11. HRCD Potential Scope of Work and Responsibilities (see Appendix C for a full description).

Actions	Description	Wildlife Benefits	Implementation Timeline
Vegetation Enhancement and Weed Treatment Monitoring	Habitat Enhancement- HRCD establishes a series of long-term photo plots to monitor restoration progress. Uses physical maps, GPS, and rebar to maintain locations. Weeds- HRCD establishes photo plots, GPS locations, and physical maps showing infestations and treatment.	Monitors and maintains the restoration/enhancement effort to promote preferred and desirable habitats.	Implemented by HCRD at appropriate timeframes, annual events. Ongoing.
Annual Festival	Annual festival where HR community residents can interact together and learn about the history of HR and rural life. Series of informational booths set up by HRCD, IDFG, BLM, and other interested groups.	Educating residents and public about conservation, wildlife, and historical issues.	Coordinated by HRCD, future homeowners association and Harris Family.
Covenants Conditions and Restrictions Monitoring	HRCD monitors and informs the future homeowners association of CCR infractions	Enforcing compliance of conservation rules at HR.	First year of HRCD position. Ongoing.

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