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THE BRBNA CONSERVATION FRAMEWORK:

SAVING AN ENDANGERED LANDSCAPE THROUGH PARTNERSHIP

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INTRODUCTION

Over the past three years, the Blue Ridge Berryessa Natural Area (BRBNA) Conservation Partnership (the Partnership) has focused its efforts on building a comprehensive resource database, participating in a pilot vegetation classification and mapping project, and developing a model for determining conservation priorities – all designed to establish a strong scientific underpinning to its planning efforts. The Partnership is now directing its attention to developing and implementing strategies that utilize the available information for conservation and management purposes. This '*Conservation Framework*' seeks to translate the science and promote the tools the Partnership has developed into an integrated conservation plan focused on three core conservation elements – habitat/biodiversity, rangelands, and recreation in the BRBNA.

The *Conservation Framework* is intended to guide and promote the conservation of the BRBNA through a concise presentation of information, tools and opportunities for involvement and collaboration. As an outgrowth of a diverse partnership, such a document is neither prescriptive nor objective driven. Instead, successful implementation will rely on interested parties taking advantage of the opportunities presented.

The *Conservation Framework* is intended to serve five main purposes:

- To provide a model for landscape-scale collaborative conservation planning.
- To convey the unique characteristics of the BRBNA to a broad array of stakeholders including residents, businesses, and government officials throughout the region.
- To communicate a conservation vision for the region and the importance of broad participation in preserving, protecting and enhancing the BRBNA.
- To provide tools and information that will allow landowners, planners, public agency staff, and other interested stakeholders to participate in efforts to achieve the conservation vision for the BRBNA.
- To achieve broad support for the conservation of the BRBNA.

The *Conservation Framework* also serves as the foundation for a major public outreach effort by the BRBNA Conservation Partnership. The Partnership will present the Conservation Framework to a variety of audiences including private landowners, federal and state agencies, county planning staff, and non-profit and community organizations. The intent is to obtain feedback from a broad array of stakeholders, and to incorporate their comments into the final Conservation Framework. This will help to ensure that the Conservation Framework becomes a useful tool for conservation of the BRBNA.

BRBNA Conservation Framework

The efforts of the BRBNA Conservation Partnership to date have exemplified the ideal in collaborative conservation – private landowners, public agencies, and organizations working together to achieve common goals for protecting and managing significant natural resources. It is the hope of all the partners that these efforts will continue to grow and gain momentum in order to effectively protect and steward the BRBNA, promote the well being of its gateway communities, and provide a model for other similar efforts throughout the state and the nation.

CHAPTER 1: THE BLUE RIDGE BERRYESSA NATURAL AREA

GEOGRAPHY AND CHARACTER OF BRBNA

Geographically, the Blue Ridge Berryessa Natural Area (BRBNA) can best be understood as a peninsula of wild and rangelands extending from the southern boundary of the Mendocino National Forest all the way to Interstate 80 in Solano County. This mosaic of natural habitat, working ranches, occasional vineyards, and extensive recreation lands, is part of an even larger ecological zone that extends north into Oregon. Encompassing over 785,000 acres, the heart of the BRBNA is located approximately 90 miles west of Sacramento and 100 miles northeast of San Francisco, which is about a two and a half hour drive from both cities (**Figure 1-1**). The BRBNA includes portions of five rapidly growing counties – Napa, Yolo, Solano, Lake and Colusa. Eight cities and unincorporated communities serve as gateways to the BRBNA including Williams, Woodland, Esparto, Winters, Napa, Rutherford, Angwin, Middletown, Lower Lake and Clear Lake (**Figure 1-2**).

To the south of the BRBNA are the Solano County cities of Fairfield and Vacaville, located along the fast growing I-80 corridor linking the Bay Area with Sacramento. West of the BRBNA is Napa County and the Napa Valley, a premier tourist destination, world renowned for its wine and scenic vineyards. Also to the west is Lake County with its lake-oriented recreation and retirement communities. The vast farmlands and expanding bedroom communities of the Central Valley form the eastern boundary of the BRBNA. The northern boundary of the BRBNA is the watershed of the North Fork of Cache Creek in the Mendocino National Forest, which extends from within the BRBNA to over 50 miles northward.

Land in public ownership accounts for close to 303,000 acres (approximately 38%) of the BRBNA and includes lands owned and/or managed by the Bureau of Land Management (BLM), the Bureau of Reclamation (BOR), the California Department of Fish and Game (CDFG), the California Department of Parks and Recreation, and the US Forest Service (USFS). Private lands and lands without public access comprise approximately 483,000 acres of the BRBNA including large ranches, land trust protected natural resource lands, and lands in the University of California's Natural Reserve System.

The landscape is characterized by both its natural values and its support of land-based economic enterprises. A wide variety of habitats are represented within the BRBNA including serpentine chaparral, grasslands, oak woodlands and extensive riparian and cliff habitats. The area's size and remoteness support tule elk, bald and golden eagles, mountain lions and black bears. Privately owned lands in the region have a long history of agricultural use and include a

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number of large cattle ranches as well as vineyards, one of which has been in operation since 1893.

The BRBNA region is also rich in cultural resources. Traces of human settlement have been found throughout the region dating back 10,000 years. More recently, four Native American groups populated the region – the Hill Patwin, the Pomo, the Lake Miwok, and the Mayacamus (Wappo). Following Native American settlement, Spanish explorers arrived in the region as early as 1808, followed by other settlers of eastern European descent. The California Gold Rush transformed the region's flatlands from isolated farming communities into a booming agricultural region and provided a market for the quicksilver produced from the area's mercury mines. Stops on the Southern Pacific Railroad put many of the gateway communities on the map.

Recreation opportunities are found throughout the BRBNA, primarily on public lands, providing a wide variety of nature-based, resource-compatible activities. These include hiking through the region's scenic and varied terrain and natural areas, lakeside or more remote camping, biking and horseback riding along the region's many roads, fishing, canoeing and kayaking in the region's lakes and creeks, swimming, boating and water-skiing at Lake Berryessa, and white water rafting in Cache Creek.

REGIONAL SIGNIFICANCE OF THE BRBNA

The BRBNA's regional significance stems from its three distinct values – first, its biological diversity and unique habitats; second, the presence of large working ranches; and third, its broad range of recreational opportunities. These values co-exist in a sparsely populated landscape with clearly defined natural boundaries. Maintaining and enhancing the region's abundant resources will depend on the long-term conservation and enlightened stewardship of the entirety of this extensive contiguous land area.

Largely undisturbed by development, the BRBNA supports a rich natural landscape. Unique geologic features, such as serpentine soils, provide exceptional habitat for specialized species. Extensive contiguous ranches and natural areas provide for the movement of large wildlife species and allow the ecosystem to function on a larger scale than is possible in more fragmented landscapes. The BRBNA is part of California's North Coast Ecoregion that has been identified by The Nature Conservancy as having nationally significant biodiversity values. Few locations in the country host such a large concentration of rare species and habitat types (**Figure 1-3**).

Large working ranches reflect the region's economy and history, revealing a landscape shaped by decades of human use. Poor agricultural soils, limited water, and remoteness have suppressed competition from other land uses, allowing these working ranches to remain at least marginally economically viable despite sometimes wildly varying markets. Generations of families have operated these ranches and they provide a rich legacy of California's heritage that has vanished from many regions of the state.

The BRBNA's high scenic value and its lakes and rivers provide for a variety of nature-based recreational opportunities. However, in recent years many of the region's destination recreation areas have become increasingly popular and are potentially over-used at specific times of the year. Fortunately, there are considerable unrealized opportunities for more dispersed nature-based recreational pursuits that enable visitors to experience the beauty and diversity of the broader region and reduce over-usage at the existing recreation areas.

CONSERVATION CHALLENGES

Growth and development is the single greatest threat to the integrity and conservation of the BRBNA's natural resources, working ranches, and recreational values. Pressures on the BRBNA will stem from the projected increase in the populations of the two adjacent metropolitan regions. The San Francisco Bay Area metropolitan area is expected to increase from its 1997 population of approximately 6.6 million residents to 8.3 million residents in 2020 (26%). The Sacramento metropolitan area is expected to increase during the same time period from 1.8 million residents to 2.7 million residents (50%). Anticipated growth within the five-county BRBNA region is even more pronounced than that of the state as a whole. The five-county population is expected to increase by approximately 329,000 people by 2020, an increase of 43% over the 2000 population. In contrast, the state population is only projected to grow by 29% during this same time period. The population of the five county region is projected to grow to approximately 836,000 by 2050, a 109% increase from 2000, while the state population is only expected to grow 61% overall during this same time period. The growth is projected to occur through a combination of urban expansion into open space lands and the intensification of development within existing urban areas.

Due in part to the region's rugged terrain and remoteness, the BRBNA has been relatively untouched by the pervasive development that has transformed the San Francisco and Sacramento metropolitan areas and much of California in general. However, growth pressures from the burgeoning regions south, west, and east of the BRBNA pose a real threat to the historic safety valve of geographic isolation. As these surrounding regions continue to expand,

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the BRBNA faces a number of conservation challenges including: 1) intensified development within the BRBNA, 2) increasing land values, and 3) increased recreation pressure.

Development within the BRBNA could take several forms – dispersed residences on small lots, large estate development, and isolated residential subdivisions. The implications of such development are the:

- Loss of habitat and reduction of the region’s significant biodiversity;
- Severed wildlife corridors reducing the range that large mammals have to travel and forage;
- Introduction of non-native plants and wildlife that threaten the health of native species;
- Water quality problems resulting from erosion and runoff;
- Fragmentation of working ranchlands; and
- Land use conflicts between new development and working ranches.

Ironically, as new homes and developments are built within the BRBNA, the resource values that attract people are impacted, and land values rise. Soaring land values make the economics of ranching and farming less sustainable and conservation purchases more difficult. Proximity to areas where land values are already high, such as Napa and Davis, is particularly enticing to both developers and residents alike, as they hope to expand the housing market within reach of these urban areas.

As the population of the Sacramento Valley and Bay Area regions grows, the demand for recreation opportunities within the BRBNA will increase dramatically. Absent a regional recreation plan that distributes and promotes recreation in appropriate areas and at appropriate intensities, the region’s biodiversity and working ranches could be compromised by over-use and high impact activities.

THE OPPORTUNITY FOR CONSERVATION

The BRBNA is one of the few relatively undisturbed landscapes of this size and significance in the state. The population projections for the region and the related challenges to conservation indicate that the time is ripe for conserving the BRBNA before the threats and pressures intensify and the cost of land protection becomes untenable. As the population grows and development fragments the landscape, the ability to conserve lands on a regional scale will become increasingly difficult. Time is short, and the challenges are great.

Conservation at this “landscape” scale must continue to be a collaborative effort involving diverse interests. The BRBNA Conservation Partnership has a demonstrated record of successful collaboration among public land managers and many private landowners in the area. BRBNA Partners have protected more than 67,000 acres within the BRBNA since 1997.

CHAPTER 2: THE BLUE RIDGE BERRYESSA NATURAL AREA CONSERVATION PARTNERSHIP

The BRBNA Conservation Partnership was founded in 1997 to provide a forum for public and private land managers within the BRBNA to meet and discuss their activities. Early partners included the Bureau of Land Management (BLM), the Bureau of Reclamation (BOR), California Department of Fish and Game (CDFG), U.C. Davis Natural Reserve System, the Land Trust of Napa County, the Gamble Ranch, and Homestake Mining Company, which facilitated the early meetings. The group has since grown to over 100 partners, attracting conservation-minded landowners and other individuals and organizations with the common goal of ensuring the conservation of the open and wild character of the BRBNA (see **Appendix A** for a list of and contact information for major BRBNA partners).

The Partnership's mission is to promote the conservation and enhancement of the BRBNA by encouraging the informed management of its wild, agricultural, recreational, archeological and historical resources. As a voluntary and inclusive organization, the Partnership facilitates coordination and collaboration among its public, private and nonprofit partners, provides research, information, and education services to the partners, and conducts outreach to the public.

Five principles guide the activities and decisions of the Partnership. Activities that do not conform to these principles are not undertaken by the Partnership.

- Preserve, protect and enhance natural and cultural resource values of the BRBNA including its lands, wildlife, plants, creeks and bodies of water.
- Support conservation-based land-use activities and sustainable economic development in the BRBNA and its gateway communities.
- Respect the rights of private landowners.
- Encourage resource-compatible, non-growth inducing public recreation facilities on public lands.
- Consider all positions on an issue but only support activities when the Partnership has reached consensus.

In 2003, the Partnership completed its first strategic plan and, as a part of the planning process, developed an overall conservation vision and a set of conservation and stewardship goals for the BRBNA. Over the subsequent year, each of the Partnership's subcommittees developed a vision for their area of focus along with working objectives (**Appendix B**). In addition, the Partnership has tracked the accomplishments of the Partners with regard to their work in the

BRBNA in areas such as research, land conservation, stewardship, and recreational development (**Appendix C**).

In 2002, the Partnership received the state's most prestigious environmental honor – the Governor's Environmental and Economic Leadership Award. Only fourteen such awards are given statewide each year. One of the partners, Napa Free Range Beef, has also received the Senate's Green Entrepreneur Award for two years running.

CHAPTER 3: STATE OF THE REGION

The BRBNA is named for two prominent geographic features – the Blue Ridge Mountains and Lake Berryessa. The region is also characterized by varied surrounding landscapes, most notably Capay Valley on the east side of the Blue Ridge to Coyote, Long, and Pope Valleys on the west. The region’s diverse geology supports a unique assemblage of ecological communities, including serpentine chaparral, grasslands, oak woodlands, and extensive riparian and cliff habitats. Key water bodies within the BRBNA include Lake Berryessa and Indian Valley Reservoir. Clear Lake and Hidden Valley Lake are located outside the western boundary of the BRBNA. Bounded to the east by the Capay and Sacramento Valleys, on the west by the Clear Lake basin and the Napa River watershed, on the north by the largely roadless Mendocino National Forest, the BRBNA encompasses major portions of the Putah and Cache Creek watersheds. Both creeks are tributaries to the Sacramento River Basin, originating and terminating close to one another. They represent the two most southerly of the significant east-flowing Coast Range drainages in the Sacramento River hydrologic basin. The BRBNA is part of the Putah-Cache Bioregion, a sub-region of California’s Central Valley Bioregion.

Sparsely populated and abundant in natural resources, the BRBNA stands out in California as a matrix of public and private lands that have witnessed relatively little change in the last century. Wildlife habitat is rich and extensive – tule elk, bald and golden eagles, mountain lions and bears can be found in the more remote parts of the region. Thousands of acres of oak woodland serve as the signature ranchlands that characterize those portions of the landscape shaped by human use. Cache and Putah Creeks and their tributaries, as well as the region’s lakes provide important riparian and fisheries habitat as well as a water supply for both urban and agricultural uses. Throughout the publicly accessible lands, there is also ample opportunity for nature-based outdoor recreation including hiking, bicycling, horseback riding, hunting, fishing, rafting and canoeing.

BRBNA DISTRICTS

To fully understand the geographical and ecological complexity of the BRBNA as an appendage of natural lands extending southward from the Mendocino National Forest, it is helpful to organize the BRBNA in terms of successive districts, or sub-regions, as they unfold from north to south. One might even imagine a hypothetical southbound winged migration of a golden eagle or the terrestrial journey of a southward-ambling black bear from the well-protected habitats of the Mendocino National Forest and Interior Coast Range toward the southerly expanses of BRBNA extending deep into territory transformed by humans. The five districts

within the BRBNA are described below (**Figure 3-1**) (see **Appendix D** for a description of BRBNA lands by ownership.)

Indian Valley/Bear Valley District

The first major geographical subdivision our eagle and bear might encounter is the Indian Valley/Bear Valley District (**Figure 3-2**). Here the Mendocino National Forest's Douglas fir, ponderosa and knobcone pine give way to the lower elevation chaparral and foothill pine surrounding Indian Valley Reservoir, formed by a dam built in the 1970's by the Yolo County Flood Control and Water Conservation District. To the west of this territory, towards Clear Lake, lie Long Valley, Wolf Ridge and Wolf Creek. Indian and Bear Valleys were once home to significant populations of the Pomo and Hill Patwin tribes. Today, Long Valley is one of the few areas of the BRBNA to contain significant amount of low-density rural development.

Directly east of Indian Valley Reservoir is the prominent, north-south Walker Ridge, extending to 3,600 feet in elevation at certain points and containing a mosaic of mixed chaparral, serpentine, and pockets of knobcone pine. This is publicly owned BLM land, and offers spectacular views, interesting and rare plant species, and, to some extent, potential wind energy resources. Down slope and to the east of Walker Ridge a spectacular working ranch area called Bear Valley. A showcase of private ranch operations and conservation, Bear Valley is largely protected by private conservation easements and contains a spring brilliance of wildflower displays unsurpassed anywhere in the state. The area contains the endangered Adobe Lily, and ironically, the lily and the working ranches ensure each other's joint perpetuity and survival, thanks to easements held by the American Land Conservancy. Bear Valley is also the home of at least one pair of nesting Golden Eagles.

Eastward still (this district is the widest east-west district in the BRBNA) are the private ranching districts of Antelope Valley and Cortina Ridge, both dramatic in topographical relief and containing very little human development. At the extreme eastern edge of this district where Cortina Ridge drops into the Sacramento Valley is the small Indian Rancheria of Cortina, where a number of its residents still speak the native Patwin tongue.

To the south, the Indian Valley/Bear Valley District transitions to the Cache Creek Natural Area District across State Route 20.

Cache Creek Natural Area District

Our eagle and bear, upon crossing east-west trending Highway 20, would find themselves in good company. Lands in the Cache Creek Natural Area District (**Figure 3-3**), located immediately south of the highway, from Clear Lake to the east to parts of the Blue Ridge on the

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west, are predominately public lands owned by the Bureau of Land Management, with pockets of California Department of Fish and Game (CDFG) lands, and are known as the Cache Creek Natural Area (CCNA). The Bureau of Land Management has recently completed its CCNA Management Plan. Central to this district is the proposed Cache Creek Wilderness (currently federally designated as a Wilderness Study Area), which includes more than eighteen miles of Cache Creek's north fork and main stem, an area inaccessible to automobiles, and home to both migratory and resident populations of bald eagles. It is also a major CDFG tule elk preserve with herds numbering in the hundreds of animals, and has an abundant population of black bear and black-tailed deer as well. Here in the "wild heart" of the BRBNA lands, native peoples lived for some 10,000 years until the mid 1800's, and critical archaeological sites abound in the region, including the dramatic shallow depressions of former Hill Patwin dwellings and dance lodges.

The Cache Creek district extends from near the community of Clear Lake on the west, to the upper east flank of the Blue Ridge in Yolo County, and southward to include the southern-most tributaries of Cache Creek, including Rocky Creek and Fiske Creek. The district also contains Yolo County's Cache Creek Canyon Regional Park, with camping, picnicking, and access areas for rafts and kayaks. The fast-flowing sections of Cache Creek in the canyon area are known nationwide as a blue-ribbon whitewater recreation resource used by thousands of rafters and kayakers each year. Both the wilderness and the canyon/recreational reaches of Cache Creek are currently being considered for California Wild and Scenic status.

The CCNA offers ample public hiking venues, including the popular Redbud Trail, the challenging Blue Ridge Trail, and the lesser known but highly scenic Cache Creek Ridge Trail. Opportunities exist for equestrian and off-road bicycle travel in and out of the wilderness study areas, respectively. As more people come to appreciate the dramatic scenery and the wild values of the Cache Creek Natural Area, user pressure will necessarily grow, making conservation, wilderness preservation and sound management a necessity.

Knoxville District

Still southward on our migratory path down the Blue Ridge "spine" of the BRBNA, our eagle and bear would encounter the Knoxville District (**Figure 3-4**) in the upper reaches of Eticuera Creek in the Putah Creek basin. Here at the intersection of Lake, Yolo and Napa Counties lies land originally mined in the late 19th century for quicksilver (mercury) to be used in processing during California's gold rush. In Knoxville geology is king, with some of the most complex associations and dynamic origins of rocks and minerals in the western U.S. Dominated by ophiolite sequences forged deep within former seafloor vents and surrounded by two types of

volcanic rock (Sonoma and Clear Lake volcanics), the Knoxville District is home to the McLaughlin Gold Mine, whose operations subsumed several more historic mercury mines and provided for the safe extraction of nearly 3.45 million ounces of gold. While the open pits, tailings pond and other working elements of the mines' lands are being reclaimed according to state-mandated standards, considerable land owned by the company has been transferred to the University of California Natural Reserve System for management as the preeminent serpentine-based natural reserve in the United States. The Donald and Sylvia McLaughlin Reserve is home to numerous scientific studies by geologists, ecologists, atmospheric scientists, fisheries biologists, and others.

By an artifact of circumstance, just southwest of the McLaughlin Reserve is the Bureau of Land Management's Knoxville Off-Road Vehicle Recreation Area. This labyrinthine system of dirt trails for off-highway vehicles courses throughout hilly serpentine lands. It is managed by the Bureau of Land Management and partly funded by Green Sticker funds from fees on registration of off-highway vehicles.

To the south of the McLaughlin Reserve and southeast of the Knoxville Recreation Area lies the State Fish and Game owned Knoxville Wildlife Area. This 20,000-acre habitat forms the western slope of the Blue Ridge south of the dividing saddle between the Cache Creek drainage and the Putah Creek Drainage. The recent addition of the Napa Ranch acquisition was made possible by the combined funding effort of the State Wildlife Conservation Board, the State Coastal Conservancy, the Resources Legacy Fund Foundation, and The Nature Conservancy, and has considerable potential as an expansion area for tule elk and many other species of wildlife. South and west of the Knoxville Wildlife Area are a number of large private ranches, including the Gamble Ranch, known for its locally prized, premium grass-fed beef.

Berryessa District

Lake Berryessa, a 1.9 million acre-foot reservoir formed in 1957 by the construction of Monticello Dam on Putah Creek, dominates the Berryessa District (**Figure 3-5**) in the southward journey of our bear and eagle. Managed by the federal Bureau of Reclamation (BOR), Lake Berryessa provides both irrigation and drinking water for Solano County as well as water-based recreation to a potential population in the millions within a two-hour drive of the reservoir. One of two significant recreational hubs in the BRBNA (the other being BLM's Cache Creek), Lake Berryessa is best known for fishing, water skiing and wake boarding, and a series of controversial, privatized resorts which have existed on public lands for nearly half a century. A major portion of the accessible areas of the lake is fronted with private resort development and there are, as yet, no public campgrounds and only a few short hiking trails. Only one of the

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eleven existing boat ramps is public (the rest are privately managed), and the only public picnic area is an extensive complex located on the western shore north of the BOR headquarters.

West of Lake Berryessa is Cedar Roughs, a unique forested area dominated by Sargent and McNabb cypress, and managed by BLM. Sargent cypress occur only in California and this stand is unique due to its 3000-acre size, the largest stand of Sargent cypress in the state. Cedar Roughs is also a federally designated Wilderness Study Area.

To the north of Cedar Roughs and west of Lake Berryessa lies Pope Valley, a highly scenic agricultural region now dominated by livestock grazing but increasingly being converted to grape vineyards. It is home to the Wantrup Wildlife Sanctuary, a 730 acre oak woodland preserve managed by the Land Trust of Napa County that supports studies in reforestation and ecological research. At the south end of Lake Berryessa is the Quail Ridge Reserve, another holding of the University of California Natural Reserve System. Quail Ridge Reserve occupies most of a peninsula surrounded on three sides by Lake Berryessa and harbors outstanding remnants of rare native grassland, savannah, and oak woodland habitats.

The east shore of Lake Berryessa also features a Fish and Game managed wildlife area between the shoreline and an access road to several private ranches. Large cattle ranches occupy nearly all the land on the western flank of Blue Ridge between the north-south ridgeline and Lake Berryessa. BRBNA conservation efforts on private lands focus on these large, intact cattle ranches that form a remote, wild contrast to the highly peopled western edge of Lake Berryessa. Likewise, the eastern flank of Blue Ridge down to the Sacramento Valley floor in Yolo County is also largely a mosaic of several large stock ranches, with the notable exception of an island of inaccessible federal BLM land surrounding the Blue Ridge's highest point, Berryessa Peak. Both the eastern and western flanks of the Blue Ridge are significant working landscapes worthy of conservation. From Cache Creek to Putah Creek, along both flanks of the Blue Ridge, the working ranches and BLM holdings represent a significant wild habitat corridor for eagles, bears, mountain lions, and hundreds of other species, as well as providing the scenic backdrops to the Capay Valley and Lake Berryessa. These working ranches are among the most critical conservation opportunities in the entire BRBNA.

Cold Canyon District

As the BRBNA extends southward, its width narrows somewhat, yet the hypothetical southbound eagle and bear have covered a continuous unbroken corridor of wild land since the Mendocino National Forest. Just southeast of the Monticello Dam that forms Lake Berryessa, the

last major BRBNA district begins – that of Cold Canyon (**Figure 3-6**), the inter-dam reach of Putah Creek, and the southernmost Blue Ridge.

Between Monticello Dam and the Solano Diversion Dam is an approximately six-mile reach on public and private lands which contains waters released from the cold bottom layers of Lake Berryessa, yielding a trout fishery known statewide and rivaling many at higher-altitude Sierra locations. Putah Creek rushes over boulders and rapids amidst alder and willow trees, and the waters of Lake Solano, impounding Putah Creek behind the diversion dam, are home to otter, beaver, muskrat, numerous osprey, egrets and herons, as well as recreating non-motorized boaters, fishers and picnickers. Lake Solano Park, managed by Solano County, has one of the only public, organized campgrounds in the BRBNA (the other being Canyon Park in upper Cache Creek), as well as a well-loved picnic site and remote, group campground. The Putah Creek Discovery Corridor, an active member of the Partnership, is an association of stakeholders along the inter-dam reach united by a desire to share education and outreach.

Just downhill from Monticello Dam and south of Route 128, which is the border between Yolo and Solano County, lies the inconspicuous entrance to yet another holding in the University of California Natural Reserve System - Stebbins Cold Canyon Preserve. This research facility also contains the most popular hiking trail in the BRBNA. The Stebbins Loop Trail connects the western ridgeline to the Cold Creek Canyon floor via an old homestead. Steep lands containing the canyon make home for a surprising divergence of plants and wildlife, including rare peregrine falcons.

Southward and surrounding Cold Canyon are more BLM lands, as the Blue Ridge extends southward out of public and into more private lands punctuated by a second prominent ridgeline peak, Mt. Vaca. South of here, the BRBNA narrows and tapers to its southern terminus, nearly to Interstate 80 – more than sixty miles, as the eagle flies or the bear walks, from the southernmost connection to the Mendocino National Forest. The sixty linear miles along the Blue Ridge spine of the BRBNA form a critical corridor and extension of wild lands deep into the growing populations of the Bay Area and Sacramento Valley.

CHAPTER 4: THREATS TO CONSERVATION

REGIONAL GROWTH

Regional growth and development pose the single greatest threat to the land and resources of the BRBNA and therefore present significant implications for future conservation efforts within the BRBNA. Uncontrolled and unplanned regional growth has the potential to severely impact the region's biodiversity, working ranches, and recreational opportunities. Demand for housing spurred by regional growth will be the primary impetus behind development pressures, both in and outside the BRBNA boundaries. Growth projections suggest that existing urban areas in close proximity to the BRBNA will expand while rural areas including lands within the BRBNA will face increased development pressure as opportunities for housing close to employment centers outside of the BRBNA become more limited.

Growth is likely to occur in two patterns – intensified development within the BRBNA on existing agricultural and natural resource lands; and increased densities in existing urban and suburban areas.

The first regional growth pattern, development within the BRBNA boundary, could occur if adequate land use controls are not in place. Development could take the form of new isolated subdivisions, increased rural residential development (“ranchette” development - homes on 5 to 20 acre lots), and residential estate development (sizable homes built on very large parcels of ranchland), resulting in the land being taken out of productive ranching/agriculture. Some examples include the extension of large lot rural estates north from Pleasants Valley Road into Yolo County and the interest in developing Guenoc Ranch in Lake County.

The second regional growth pattern, increased densities in urban and suburban areas, could impact the BRBNA in several ways. First the increased population will seek areas for recreation away from their local communities. The BRBNA is located within two hours of the Bay Area and Sacramento regions and is a likely destination for suburban dwellers seeking new recreational experiences. In addition, increased urban densities could result in leapfrog development. Leapfrog development occurs when new development “leaps over” areas where development restrictions are relatively strong, onto less expensive lands with fewer restrictions. Development of this type has occurred throughout the perimeter of the Bay Area. The core of the Bay Area consists largely of either privately owned developed land or protected conservation land, with an extremely limited amount of available undeveloped, unprotected land. Due to this lack of available land, new suburban development is now making its way into areas once considered far too remote from urban centers to attract significant new development.

Communities in and adjacent to the Bay Area that have experienced significant “leapfrog” development extend all the way from Cloverdale in northern Sonoma County to Hollister in San Benito County.

The BRBNA still provides a respite from this leapfrog pattern due in large part to its ruggedness and relative inaccessibility by major roadways. However, given development pressures and the significant population growth predicted for BRBNA counties and surrounding San Francisco Bay Area and Sacramento Valley regions, the BRBNA may well prove to be a desirable location for development unless appropriate land use and other protective measures are put into place.

County Growth and Policies

The BRBNA encompasses significant portions of Napa, Solano, Yolo, Colusa, and Lake counties. In 2000, the combined population of these counties was 769,397 residents. By 2020, this combined population is projected to increase to 1,098,263 residents, which is an increase of forty-three percent (43%). By 2050, the combined population is projected to increase to 1,605,109 residents, which is an increase of one hundred and nine percent (109%) from the population in 2000. Each county alone, as well as the five county region as a whole, exceeds the projected population growth rate of the state for both time periods.

Table 4-1: State, Regional and County Growth Projections 2010 to 2050

COUNTY	2000	2010	2020	2050	% and Population Change 2000 to 2020	% and Population Change 2000 to 2050
COLUSA	18,923	22,697	26,337	35,544	39% 7,414	88% 16,621
LAKE	58,863	69,259	79,676	109,488	35% 20,813	86% 50,625
NAPA	124,945	142,121	165,946	221,466	33% 41,001	77% 96,521
SOLANO	396,784	455,647	555,264	830,830	40% 158,480	109% 434,046
YOLO	169,882	222,277	271,040	407,691	60% 101,158	140% 237,809
FIVE COUNTIES	769,397	912,001	1,098,263	1,605,019	43% 328,866	109% 835,622
CALIFORNIA	34,043,198	39,246,767	43,851,741	54,777,700	29% 9,808,543	61% 20,734,502

Source: State of California, Department of Finance, *New State Projections Show 20 Million More Californians by 2050* Sacramento, California, May 2004.

Portions of Napa and Solano counties, part of the nine county San Francisco Bay metropolitan area, and Yolo County, part of the Sacramento metropolitan area, have experienced rapid suburban growth and the negative effects of what is commonly referred to as “suburban sprawl.” These include loss of productive agricultural land, development of lands encompassing important scenic and natural resources, and rising land values that eventually drive individuals in search of housing farther away from the urban centers. In response to this rapid growth and growth pressures in recent decades, all three counties have enacted relatively strict zoning and growth policies to control development (particularly related to agricultural land) and manage growth. Lake and Colusa counties are less accessible to large regional employment centers. Historically, these counties have had less development pressure and have not implemented the types of restrictive growth policies found in Napa, Solano and Yolo Counties (see **Appendix E** for BRBNA county planning profiles).

THREATS TO BIODIVERSITY, WORKING RANCHES AND RECREATION

The expansiveness of the BRBNA’s landscape is central to the natural, scenic, recreational, and agricultural resources that define the area. As a result, even a modest level of poorly planned development could damage the integrity of the region’s natural resources, the viability of working ranches, and the potential for maintaining and enhancing outdoor recreation.

Biodiversity

The BRBNA’s rich biodiversity and natural habitats have endured in large part due to their remoteness and the lack of significant development in the region. While many important habitat areas are under public and land trust protection, new development in the form of ranchettes, subdivisions, or large estates could severely impact the region’s plant and animal communities both directly and indirectly. Some impacts could result from habitat fragmentation as well as the introduction of invasive organisms, while the direct loss of land and species is also threatened by human intrusion.

Habitat Loss and Fragmentation

Habitat loss occurs when human activity displaces habitat lands. Development is the most obvious cause of habitat loss but habitat can also be severely degraded due to non-resource compatible recreation activities. Even a relatively dispersed pattern of limited development within the BRBNA could result in enough fragmentation to significantly reduce the overall number and diversity of plant and animal species found in the area. Unmanaged and incompatible recreational pursuits can result in direct impact to sensitive habitats and species, and are also the source of indirect effects from invasive species, pollution, and visitor services.

Invasive Exotic Species

While invasive species pose an ongoing threat to habitat throughout the state, with new development comes the potential for increased introduction of plants and other organisms not native to the region. If invasive, such species can wreak havoc on native habitat. They displace native species, competing for water and nutrients, and can seriously alter the natural ecosystem. Many areas of the BRBNA are already infested with such species as *Arundo spp.* and *Tamarisk spp.*, but localized efforts are currently underway to control them. Many public agencies and organizations expend enormous financial and human resources annually aimed at controlling and eliminating invasive species.

Point and Non-point Source Water Contamination and Other Pollution

Urban and suburban developments and roadways contribute to non-point sources of water pollution such as erosion and runoff. Erosion results in increased sedimentation of creeks and water bodies, posing a threat to fish and other aquatic organisms. Runoff is often laden with chemicals from home gardens and driveways as well as city streets and freeways. Increased construction in the BRBNA, particularly on steep slopes, would no doubt contribute to erosion and runoff at levels that could threaten water quality, ultimately degrading habitat for aquatic species. Point sources of water pollution originate from legal and illegal discharges of pollutants into creeks and water bodies. These are most likely to occur during major development activities, through intensive recreational activity such as motorized boating, and as a result of residential sewage problems. The potential for the creation of point and non-point sources of pollution multiplies considerably as development increases.

Fire Control

Rural development could also have a potentially major impact on biodiversity and habitat due to the fact that a fire-based ecology characterizes much of the BRBNA landscape. Even a few homes scattered through the hills and valleys results in the need for artificial fuel reduction and the vigorous suppression of wildfires, both of which can have significant adverse effects on ecosystem health.

Impacts of Domesticated Animals

Domesticated animals, introduced by residents or visitors to the region, can disturb and harm native plants and wildlife. There is ongoing debate about the extent to which domesticated animals should be restricted in protected natural areas. However, there is ample evidence that domesticated cats can have a major impact on wild bird populations, and horseback riding and dog walking must be carefully managed in public recreation areas to avoid conflicts with hikers and naturalists.

Working Ranches and Farms

As discussed previously, the greatest threat to economic viability of ranches in the BRBNA is regional growth and development that fuels land speculation, and creates pressure to subdivide large agricultural parcels into estate lots or ranchettes. This fragments the working landscape and introduces a host of other challenges to the sustainability of ranching.

Much of the BRBNA's regional character is related to the vast areas of working ranchland that exist in the area. Currently, working ranches comprise approximately 45% of the BRBNA's total land area, over 300,000 acres. This represents a significant part of the total BRBNA and is a defining element of the BRBNA's economy and landscape.

Increasing development of ranchland in the BRBNA could slowly erode the overall economy of ranching by stripping away the necessary land base to maintain sustainable operations.

Although this scenario would appear unlikely given the current size of individual ranches and the collective scale of ranching within the BRBNA, many of California's once vibrant agricultural regions have been transformed by development due to a lack of adequate conservation strategies in the face of escalating growth pressures.

Rising Land Prices

In many parts of California where significant areas of working ranchland have been lost to new development and development-related fragmentation, rising land prices in response to the potential for development served as a critical factor in the regional transformation process. Land prices related to development are often much higher than land prices related to agricultural and ranching activities. Incrementally, the loss of parcels to non-ranching activities would make the economics of ranching and farming increasingly unsustainable and conservation purchases more difficult.

Land Use Conflicts

As areas adjacent to working ranches are developed for residential uses, land use conflicts can arise. New residents attracted by the rural landscape must contend with the reality of noisy equipment, farm vehicles, and odors associated with ranching. Such conflict can evolve to nuisance lawsuits by neighbors and eventually create a less hospitable climate for ranching and ranch families. Careful location of trails and other recreation opportunities on adjacent public lands is necessary to avoid promoting trespass and other disturbances of the area's working ranches.

Loss of Agricultural Support Services

Agricultural support services include feed and farm equipment stores, diesel equipped filling stations, and packing and manufacturing facilities. As working ranches are lost to development, there are fewer ranchers needing such goods and services, often forcing these support businesses to close. This in turn makes it more costly for the farmers and ranchers that remain to procure these services, as they have to travel farther for them.

National and Global Factors

National and global factors that reduce agricultural viability cannot be controlled locally but are worthy of mentioning as they exemplify the additional challenges facing agriculture and ranching. These factors include changing livestock markets, climatic variability and drought, and the difficulty that U.S. producers have competing in a global market.

Recreation

Approximately 38% of the land in the BRBNA is in public ownership. However, the existing pattern of ownership is such that areas encompassing significant natural and scenic resources with high recreational value and the potential for providing recreational linkages are only partially protected. Significant areas of unprotected land are interspersed among protected lands. Partnerships between the public and private sectors may allow these areas to be secured in order to create a cohesive linked open space system with opportunities for long distance trails and other recreational linkages.

Losing Opportunities for Nature-Based Recreation Due to Public Policy

Expiration of the existing concession contracts at Lake Berryessa presents the opportunity to implement government policy prohibiting exclusive use of public recreation land and to broaden the range of interests served by including more nature-based recreation. However, considerable opposition to changing the status quo of exclusive use by trailer owners has created a difficult situation for the Bureau of Land Management, and the direction it will take is still uncertain.

Establishing connectivity between protected areas

In order to fully achieve the desired connectivity, it will be necessary to secure resources to acquire some land, trail easements and important recreational destination sites, as well as the participation of some private landowners. In some cases, trail access on private property may be untenable due to incompatibility with the interests of the owner.

Integrating the Needs and Plans of Private Landowners

The interfaces between public and private lands in the BRBNA require special attention, not only to avoid conflict between those who recreate on public lands and neighboring private uses – mainly related to trespassing, garbage dumping, and even the shooting of livestock – but also to integrate private land recreational uses such as ecotourism and hunting into the regional context.

Managing Use and Development

Over use of recreation areas can lead to a diminished experience for all. Excessive commercialization and unmanaged recreational activities can impact sensitive resources and pose conflicts between motorized and more nature-based pursuits. Adequate resources are essential to enable appropriate planning and management of recreational access and use, and to promote the development of a cooperative relationship among users, volunteers, private landowners and agencies.

CHAPTER 5: CONSERVATION FRAMEWORK AND PRIORITIES

Conservation of the three unique features of the BRBNA – biodiversity, working ranches, and recreation are essential to:

- Protect the diversity of species and habitats found in the BRBNA,
- Conserve the scenic qualities, history and economic values associated with ranching, and
- Enhance the visitor experience and user quality of life through opportunities for nature-based recreation.

Cultural resources must also be protected and enhanced in the BRBNA for their intrinsic value as well as the research and educational opportunities they offer.

This chapter describes the regional GIS database and conservation framework model developed to identify those portions of the region most important for the protection of biodiversity, those portions most suitable for maintaining working ranches, and the distribution of recreational opportunities within the BRBNA most compatible with both. The conservation priorities that result from this mapping are also discussed. The model is based on the best scientific spatial information available and provides flexible analysis tools that can be adjusted to assist landowners, agencies and organizations with making their own conservation decisions. It is important to note that alternative scenarios may result based upon an analysis with different priorities and inputs. Agencies and organizations with varied missions and goals are therefore able to use the model according to their particular purposes and interests.

The cultural resource framework and conservation priorities are also addressed in this chapter. However, cultural resources were not included in the mapping process out of respect for the location sensitivity of these resources.

BACKGROUND

In 1999, the Partnership began development of a geographic information system (GIS). The GIS provides a scientific basis for the *Conservation Framework* and demonstrates how accurate spatial information and scientific principles can be used in support of developing a common conservation vision. A GIS allows layers of spatial information to be viewed together and analyzed quantitatively, leading to a greater understanding of the resource characteristics of a given study area. The BRBNA GIS combines many layers of spatial information that pertain to three distinct areas (domains) of conservation: 1) Biodiversity, 2) Working Ranches and 3) Recreation. The

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results of this mapping effort allow the Partnership and its members to evaluate lands within the BRBNA and establish priorities for conservation within these three domains.

Previous GIS-based conservation mapping efforts in the region were limited in either spatial extent or data resolution, including The Nature Conservancy's (TNC) North Coast Ecoregional Plan, CalWater Planning Watersheds, and NatureServes's Project Aldo. TNC identified sub-watershed scale conservation targets averaging 26,000-acres in size; CalWater used sub-watersheds averaging 6,000 acres, and NatureServe mapped 40-acre pixels. The GIS model developed by the Partnership incorporates a greater extent of high-resolution input data and increases analysis resolution to one-acre grid cells. Mapping at this scale provides the detail necessary to analyze biodiversity patterns and identify conservation priorities within ownership blocks across such a large study area.

Mapping and modeling was prepared by the UC Davis Information Center for the Environment (ICE) and Jake Mann, GIS Specialist, using Universal Model Builder (UMB), an ArcView/Spatial Analyst GIS software extension that ICE developed for the US Forest Service (see **Appendix F** for the full ICE 2004 final report). UMB allows users to combine maps in a conservation priorities model, assigning different weights to different conservation values based upon the perceived relative importance of those values to the user. Therefore, as previously noted, outcome scenarios may differ depending on priorities that have been designated.

UMB is simply a tool that can be used by the partners to make more informed decisions about conservation projects, be they land acquisitions or stewardship efforts. It also allows the Partnership to promote more proactive conservation by viewing priorities in the context of the region as a whole. With limited financial resources available, it is important for all conservation entities, public and private, to prioritize their efforts and get the most conservation value for their dollar. Other factors will undoubtedly weigh into many decisions such as opportunities at hand (willing sellers), funding availability, political and policy challenges, etc. However, a strong set of priorities backed up with solid data can provide important momentum and leverage for activities on the ground. The development of conservation priorities through the UMB establishes a scientific standard for regional efforts and a common hub around which to coordinate activities of the partners.

Mapping Method

For all three domains, the mapping method was the same. First, data layers were acquired or created. The input data layers are the scientific information that underlies the model results for

each domain – biodiversity, working ranches, and recreation. Data that were used with UMB include:

- Roads
- Perennial and seasonal streams
- Water bodies
- Soils
- High-resolution Vegetation
- Rare Species Occurrence
- Vertebrate species habitat suitability
- Viewsheds
- Parcel & ownership information
- Trails and recreation workshop data

Vegetation Mapping

The vegetation mapping of BRBNA’s 785,000 acres was completed using two different data sources. ICE completed high-resolution mapping (two acre mmu and less using “heads-up” digitizing of USGS Digital Ortho Quarter Quad Images) for approximately 478,000 acres or 61% of the BRBNA. Less-resolute CalVeg data (five acre mmu and higher derived from automated classification of satellite imagery) was used for the rest of the study area. The ICE mapping generally covers most of the BRBNA south of Highway 20 with the exception of the area east of Highway 29 as illustrated in **Figure 5-1: ICE and CalVeg Mapping Coverage**.

Domain Mapping and Data Ranking

To create the priorities for each domain – biodiversity, working ranches, and recreation – relevant data layers were selected for use from the overall catalog of GIS data. The data layers used to create priority maps are identified in each section below.

The appropriate set of data layers was selected to develop the priorities for biodiversity, working ranches, and recreation. For example, the biodiversity layer was created using the following data layers:

- Rare Species Occurrences (California Natural Diversity Database)
- Priority Vegetation Types (weighted by rarity)
- Vertebrate Habitat Suitability (Wildlife Habitat Relationship models)

The data was then ranked for use in the domain mapping. Once each layer was developed and ranked, the layers were combined using UMB. Ranked input layers were assigned weights based on data reliability and relevance to the model. All layer rank values were then multiplied by their relative weight (i.e.: 1.0, 0.6, 0.3) and added together. Output values were normalized to a scale of 0-1.

BIODIVERSITY DATA LAYERS AND PRIORITIES

From its inception, the Partnership has recognized the importance of preserving biodiversity as a key component of its overall vision to conserve the region. More recently, as a greater understanding of the area's ecological resources has been developed, the significance of the BRBNA's biodiversity has been shown to be even greater than originally thought. Through extensive vegetation mapping and analysis conducted between 2000 and 2004, the Information Center for the Environment (ICE) and NatureServe (a national organization that promotes the preservation of biodiversity) have documented major concentrations of rare species, globally significant plant communities and areas of high biodiversity in the BRBNA.

The term "biodiversity" has become widely used in conservation circles, most correctly as it refers to the variety of life forms in a given area: the different plants, animals and microorganisms, their genetic make-up and the ecosystems of which they are part. While considerable efforts have focused nationally and globally on the preservation of biodiversity for several decades, we continue to lose plant and animal species at an excessive rate. According to the most comprehensive study done to date, over a million species will be lost in the coming 50 years. It has been estimated that the scale of global extinction of species that occurred in the 20th century was at a rate a thousand times higher than the average rate during the preceding 65 million years.

The single greatest threat to biodiversity in the U.S. and around the world is the loss of natural communities to development and agriculture. Since the time of European settlement of North America, 27 different types of natural communities have declined by 98 percent or more in size. In just five years during the 1990's in the U.S., 16 million acres of forest, agricultural land, and open space were converted to urban and other uses. Urban and suburban sprawl are the leading causes of habitat loss and consequently biodiversity loss. Clearly, this is one of the key threats to biodiversity and habitat in the BRBNA given the surrounding population growth and development pressures.

Method

Three GIS data layers were created and combined to build a composite biodiversity priorities map. Each of these layers is a useful tool by itself in providing an understanding of the habitat and species values of the BRBNA. The methods used to create the biodiversity layers are described below:

Rare Species Occurrences

The CDFG oversees the California Natural Diversity Data Base (CNDDDB). The primary purpose of the CNDDDB is to gather and disseminate data on the status and locations of rare and endangered plants, animals, and vegetation types in order to conserve California's biodiversity. CNDDDB data is point data based upon recorded field observations of rare and threatened species. Polygons estimating spatial reliability of a species' sightings are applied to the area around these points. Larger polygons indicate a less accurate placement and were given a ranking of 4. Smaller polygons indicate accurate species location and were given a ranking of 5. **Figure 5-5: California Natural Diversity Data Base Species Occurrence** indicates areas of high certainty of species occurrence in red and areas of medium certainty of occurrence in orange.

Priority Vegetation Types

The Manual of California Vegetation identifies and describes the vegetation communities that occur throughout the state. Twenty-two vegetation types that occur within the BRBNA were selected and prioritized for use in the biodiversity model. The priority rankings were based on CNDDDB data also. The highest priority vegetation types were assigned a weight of 1 and a value of 5 due to their rarity and/or ability to sustain rare, threatened and endangered plant and animal species. These are:

- McNab Cypress Alliance
- Brewer Willow Alliance
- Serpentine Barren
- Sargent Cypress Alliance

In **Figure 5-6: Priority Vegetation Types**, the areas with the highest priority vegetation types are indicated in red. Four additional colors represent a 20 percent scaling down of priority rank for each with dark green at the medium (60) level and light purple at the bottom level of 20. These vegetation associations and alliances were assigned a priority of 2 through 5 and a value of 4 through 1.

Vertebrate Species Habitat Suitability

The California Department of Fish and Game's (CDFG) California Wildlife Habitat Relationships (CWHR) data system is a wildlife information system and predictive model for California's regularly occurring birds, mammals, reptiles and amphibians. CWHR was queried to identify the vertebrate species that occur within the BRBNA Conservation Framework Study Area. This resulted in about a hundred species, mostly birds, that were used for habitat suitability modeling (for complete list, see Appendix ?).

The advantage of the CWHR vertebrate data layer is that it compensates for the data voids and false negative occurrences of target species found in the California Natural Diversity Data Base data. This allows for a more complete representation of biodiversity distribution. Because the CWHR data is not directly compatible with the vegetation mapping completed for the BRBNA, the 57 vegetative cover types and 7 human-dominated cover types used for the vegetation map were translated into 26 and 4 CWHR habitat types for use in mapping and analysis.

Each species' suitability was determined using habitat type, canopy cover density, and stem size (the latter, only if tree-dominated) attributes to determine three suitability ratings: one each for forage, cover, and reproduction for that species. These three suitability layers were combined (using a geometric mean) into a single habitat suitability map for each species.

Eight separate maps were created to conduct this analysis - two maps each for mammals, reptiles, amphibians and birds. Maximum and mean value analyses were conducted for each group. For each of these four groups, the maximum analysis indicated the areas most suitable for protecting one or more species while the average analysis indicated the areas most suitable for the most species in that group. Each maximum and mean species layer was reclassified to values of 1-5 based on their modeled analysis.

Biodiversity Priorities

Each map paints a somewhat different picture of critical habitat and biodiversity in the region. Importantly, each can be used to better understand the values that become prominent based upon different inputs and data. Land conservationists and managers can use the individual maps to help guide their work as each view provides different but equally important information about those lands we should pay particular attention to with regard to wildlife corridors, habitat integrity, rare species and plant communities.

In choosing where to focus attention in order to protect our most unusual plant and animal species, the Rare Species Occurrences map provides an important tool based on actual field observation. This data can be extraordinary useful for planning and management purposes to

guide research, recreation, and education as well as stewardship activities such as invasive plant control, fire management and habitat restoration. The Priority Vegetation map, on the other hand, presents a clear picture of the BRBNA's rare habitat types such as Cedar Roughts (cypress), Knoxville (serpentine areas) and the Cache Creek/Walker Ridge area (mixed chaparral and serpentine), while the Vertebrate Species Habitat Suitability is better at illustrating the importance of the Blue Ridge and east side of Lake Berryessa for bird and other animal habitat. These oak woodland ranges provide critical feeding and nesting areas for birds as well as environments well suited to amphibians, reptiles and many mammals.

Using the data and information described above, the three data layers (rare species occurrences, priority vegetation types, and vertebrate habitat suitability) were given equal weighting to create a composite biodiversity conservation priorities map. The decision to weigh layers equally (and the value rankings in the previous step) was based upon the consultation of experts at U.C. Davis and the Information Center for the Environment as well as members of the Science and Data Committee of the BRBNA Conservation Partnership. (See **Figure 5-9: Biodiversity Conservation Priorities**). The three comprising layers are illustrated in Figures 5-9a, b, and c.

Biodiversity Conservation Priorities shown in these maps indicate those areas that appear most critical for conserving biodiversity in the region based on the composite analysis. From north to south these areas are:

- Walker Ridge
- Wilson Valley
- McLaughlin UC Natural Reserve
- Knoxville Recreation Area
- Cedar Roughts

Walker Ridge is largely public (BLM) land, but it has periodically been proposed for wind energy development, which would have a very substantial impact on its vegetation and wildlife. Likewise, the Knoxville Recreation Area is BLM land that has been damaged by uncontrolled off-highway vehicle recreation, and has also been explored for wind energy; part of it has recently been designated an Area of Critical Environmental Concern. Wilson Valley and Cedar Roughts are BLM lands that are protected by federal wilderness status. The McLaughlin UC Natural Reserve is managed for its research and conservation values and is governed by a conservation easement. It is clear from the mapping analysis that substantial gains in the conservation of biodiversity could be made simply by changing management

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practices on federal lands. In addition, all five of the above areas contain substantial undeveloped private in-holdings, most of which have yet to be protected by conservation easements.

Some of these areas are already in public ownership or have been permanently protected as part of the UC Natural Reserve System or through land trusts. However, our results indicate the need for more active conservation on public lands. Other areas are in private ownership but have conservation easements that protect the resources. Some unprotected private lands have important biodiversity and habitat values that require conscientious stewardship. These include the Blue Ridge and east side of Lake Berryessa, which rank prominently with regard to bird and other animal habitat, though it is not as apparent in the composite map.

In general, based upon the mapping and analysis, efforts in land conservation which seek to protect biodiversity and important natural habitat, should focus on:

- Areas of suitable habitat for the greatest variety of wildlife species
- Rare and unusual plant communities
- Areas with known occurrences of rare, threatened and endangered plant and animal species

Other lands with key attributes can also contribute to habitat and biodiversity protection including:

- Lands that provide connectivity between already protected lands
- Areas adjacent to currently protected areas
- Private in-holdings within public conservation holdings
- Large parcels in a single ownership
- Lands in close proximity to developed areas
- Lands that affect water quality in waterways and lakes such as Putah Creek, Lake Berryessa, Indian Valley Reservoir, and Cache Creek, some of which are designated as impaired.
- Areas where multiple conservation objectives (biodiversity, working ranch and/or recreational) can be met simultaneously
- Lands subject to development threat

WORKING RANCH DATA LAYERS AND PRIORITIES

Method

The working ranch suitability analysis was prepared in February 2004 specifically for cattle grazing. The results of the mapping would likely be different if a different species was the focus of the analysis. As discussed previously, the model is very flexible and different data layers can be combined and prioritized differently to answer different questions. The following GIS data layers were used in this analysis.

Soil Type

The US Department of Agriculture Natural Resources Conservation Service (NRCS) Soils Survey Geographic (SSURGO) database is the most detailed level of soil mapping done by the NRCS. SSURGO data was used to identify pasture/rangelands. Non-irrigated capability classes 6 and 7, with Class 6 soils being more suitable for grazing, were selected as these are the soils most suitable for pasture and rangeland. **Figure 5-10: Grazing Soils (SSURGO)** illustrates the most suitable soils in green.

Grassland and Sparse Oak Woodland Communities

Grassland communities suitable for grazing were derived from the vegetation map and are illustrated in **Figure 5-11: Grasslands Suitable for Grazing**. These areas are:

- Upland Annual Grasslands and Forbs Formation
- Perennial Bunchgrass Restoration Sites
- California Annual Grasslands Alliance
- Serpentine Grasslands NFD Super Alliance
- Annual Grassland (CalVeg areas only)

In addition, the vegetation map was used to identify oak woodland types without riparian associations. Areas with a canopy cover of less than 40% (or conversely, 60% or more grassland cover) were identified as most suitable for grazing and are illustrated in **Figure 5-12: Sparse Oak Woodland Communities Suitable for Grazing**. These communities are:

- Coast Live Oak Alliance (ICE)
- Interior Live Oak Alliance (ICE)
- Mixed Oak Alliance (ICE)
- Black Oak Alliance (ICE)
- Blue Oak Alliance (ICE)

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- Valley Oak Alliance (ICE)
- Oregon White Oak Alliance (ICE)
- Valley Oak Woodland (CalVeg areas only)

Agricultural Lands

SSURGO data on soil potential for vineyards was intersected with the FMMP grazing layer to indicate both vineyard development potential and/or threat of vineyards on viable rangelands. These areas are illustrated in **Figure 5-14: Agricultural Lands**. This data layer received a high value indicating that lands with vineyard development potential were important to conserve as working ranches.

Owner Density

Low ownership density is an indicator of working ranch suitability. The fewer the number of owners in a given area, the more suitable the land is for large working ranches. Ownership density was derived by aggregating parcel data by owner. From a conservation perspective, working with a single owner to conserve and manage a large working ranch is easier than working with multiple owners. **Figure 5-14: Ownership Density** illustrates areas with the lowest owner density in dark brown and the highest owner density (generally subdivisions) in white. It should be noted that some of the areas indicated in dark brown are public lands and will later be excluded from this analysis.

Visibility from BRBNA Roads and Public Lands

This map layer takes into account the scenic preservation value of lands used for grazing. Lands that were visible from points along selected BRBNA roads were assigned conservation values. In addition, scenic points from the recreation data were used to calculate viewsheds from valued vistas in the BRBNA. Land visible from the most points received the highest values. In **Figure 5-15: Visibility from BRBNA Roads and Public Lands** the areas with the darkest colors are the most visible.

Working Ranch Priorities

The primary working ranch conservation priorities indicated by the mapping and analysis are:

- Land identified as grazing land by the FMMP
- Lands with soil types suitable for pasture and rangeland
- Grassland soils
- Lands classified as grassland or sparse oak woodland communities

- Lands visible from public roads and scenic high points that contribute to the scenic quality of the BRBNA
- Lands with low ownership density

Figure 5-17: Working Ranch Suitability illustrates those areas of the BRBNA that are most suitable for ranching. Some of these areas are currently in ranching operations while others may not be. This map was created using the data and information described above with a variety of values and weights assigned to each data layer. Areas with low suitability for ranching were removed (**Figure 5-16a: Chaparral Exclusion Layer**). The map includes all contiguous areas greater than 200 acres (**Figure 5-16b: Contiguous Ranch Lands of 200 or More Acres**). Figure 5-17 indicates that the areas most suitable for ranching are, from north to south: Bear Valley, Cortina Ridge, the eastern slope of the Blue Ridge in Yolo County and the east side of Lake Berryessa. In general, when considering a working landscape conservation acquisition, other lands to protect and conserve are:

- Lands adjacent to existing working farms and ranches
- Lands currently in production
- Lands that avoid recreation conflicts
- Areas where multiple conservation objectives (working ranch, biodiversity, and/or recreational) can be met simultaneously
- Lands under development threat

Recreation and biodiversity conservation decisions are largely driven by what is on the ground – sensitive habitat, scenic vistas, creeks and water bodies, etc. For working ranches, conservation decisions also have a significant economic component. If a ranch is not economically viable, it may cease to function as a working ranch and succumb to development pressures. For this reason, it is also important to consider criteria for maintaining economic viability. There is a threshold size below which ranching in the BRBNA is not profitable. In addition, ranching that is positively supported by the factors listed below is more likely to be profitable. Moreover, economically healthy ranching operations are better positioned to implement resource-friendly stewardship practices.

Factors that influence the economics of ranching:

- Proximity to ranching infrastructure and services (e.g. farm supply stores)
- A critical mass of other ranches in the region
- Access to water
- Zoning and land use that support agricultural operations

- Marketability of ranching products

TRAILS AND RECREATION DATA LAYERS AND PRIORITIES

The primary trails and recreation goal is to promote nature-based recreation in the BRBNA. Trails and recreation priorities include major destinations and corridors and were driven by three major considerations:

- Planning guidelines that reflect the Partnership's trails and recreation vision, goals, and objectives
- Identification and mapping of potential recreation opportunities, access, and camping facilities
- An understanding of future trails and recreation needs

Trails and recreation were mapped using a slightly different methodology than that used for biodiversity and working ranches. The trails and recreation data and priorities were developed during workshops held with a variety of recreation and conservation experts in May 2004 (see **Appendix G** for process description). These experts had local, on-the-ground knowledge of the resources and identified both existing and potential recreation destinations (natural, scenic, cultural, and historic), trailheads or access points, and camping areas. Connectivity opportunities were also identified. Workshop data was transferred to the GIS, reviewed for accuracy, and evaluated based on the trails and recreation planning guidelines. Groups of destinations were organized into major destinations (or activity areas) with names denoted for each tying to geographic location.

Method

Twelve GIS data layers were created and combined to build the final recreation priorities map. Each of these layers and the method used to create the layer are described below:

Recreation destinations are areas with natural, scenic, historic or cultural interest. These areas were identified at the workshop and are illustrated in **Figure 5-18: Existing Recreation Destinations**. There are approximately 100 recreation destinations. These areas all have some form of public access that is either unrestricted or constrained (e.g. requires reservations). Once the recreation destinations were identified, each one was ranked according to the number of different activities available in any one location (e.g. horseback riding, hiking, and hunting). Each different activity was ranked equally. **Figure 5-19: Existing Recreation Destination Density** illustrates the concentration or density of existing recreation destinations. The darkest

areas are those with the greatest variety of recreation activities and include Indian Valley, Cache Creek Canyon and Cold Canyon.

Existing access points are trailheads and put-ins identified at the workshop. Each trailhead and put-in received a 200-meter buffer and all points received a ranking of 5. **Figure 5-20: Existing Access Points** illustrates these points.

Existing trails includes those that were mapped prior to the workshop as well as those identified at the workshop. Data from three partners – yolo-hiker.org, Berryessa Trails, and the BLM provided the majority of the data for this map. Trails received a 100-meter buffer and all trails were assigned a ranking of 5. **Figure 5-21: Existing Trails** illustrates existing trails.

Figure 5-22: Existing Recreation was created by combining Figures 5-19 through 5-21. The darkest areas on this map indicate the areas with the greatest concentration of existing recreation. The areas of greatest concentration include, from north to south Walker Ridge/Indian Valley Reservoir, Wilson Valley, Wilbur Hot Springs, Payne Ranch, Upper and Lower Cache Creek Canyon Park, McLaughlin Reserve, Knoxville OHV Area, Knoxville Wildlife Area, Wilson Valley, various locations around Lake Berryessa, Cold Canyon, Mixx Canyon, and Napa and Millikin Reservoirs.

A variety of prospective access points were developed at the workshop. Allocations for potential trailheads or boat put-ins include a 200-meter buffer. Prospective camping sites and general access points received a 500-meter buffer. (**Figure 5-23: Proposed Access Points**)

Small roads include ranch roads, abandoned roads, dirt roads and utility roads mapped by interpreting aerial photographs of the BRBNA. Small roads on public lands represent future trail potential and some of these roads were identified at the workshop as potential linkages and connections. Similar features providing prospective connections across private lands are also identified. Main roads were removed to create this map. (**Figure 5-24: Small Roads**)

Ridges and perennial streams indicate areas of recreation potential as recreational users are drawn to ridge tops where the views are expansive and to creeks, which are generally cooler and well vegetated. (**Figure 5-25: Ridges and Perennial Streams**)

Workshop participants identified prospective connections. These are areas where connections are needed to link existing trails and recreation areas. Proposed connections received a 300-meter buffer, indicating that the trail location was moderately flexible within the area identified at the workshop. (**Figure 5-26: Proposed Trail Connections**)

The viewshed map was included in the recreation analysis because areas with expansive views or scenic features are desirable recreation destinations. The viewshed map was created using scenic points identified in the workshop plus elevation. The darkest areas illustrated in **Figure 5-27: Viewshed** are those that are visible from the most points along major roads and from scenic areas in the BRBNA.

Proposed destinations were also identified at the workshop. These areas are desired recreational destinations that are currently inaccessible, generally because they are public lands landlocked by private lands. **Figure 5-28: Proposed Destinations** illustrates suggested future recreation destinations. These include Turkey Run/Abbot Mine, Todd/Lauff's Ranch, ZimZim Creek and Falls, Berryessa Peak, Gosling Canyon, Cedar Roughs, and Lake Curry Reservoir.

Similar to Figure 5-22: Existing Recreation, **Figure 5-29: Proposed Recreation** was created by combining Figures 5-23 through 5-28. Areas of proposed access (Figure 5-23) and Proposed Destinations (Figure 5-28) received the highest weighting, a 1. Viewsheds and proposed trail connections received a weighting of .75, while small roads and ridges and streams received a weighting of .5. The darkest areas on this map indicate the areas with the highest potential for recreation development.

Recreation Priorities

Figure 5-30: Recreation Priorities indicates that areas with high existing recreation and areas of high proposed recreation value rank highest and areas of little or no existing or proposed value rank close to 0. To develop this map, the existing recreation layer was ranked from 0 to 5. Areas of the highest current recreation value received the highest value (5). The proposed recreation layer was also ranked 0 through 5 with the areas of highest proposed recreation value receiving a 5. Using this weighting, the key recreation priorities are illustrated in the darkest green and include Berryessa Peak, the BLM lands with constrained access, and Lake Curry.

CULTURAL RESOURCE PRIORITIES

Cultural resources include archeological sites, historic locations and structures, sacred sites, and traditional cultural properties. Cultural resources represent the collective heritage of all Americans and are therefore, important to preserve. They are non-renewable sources of information about our history. Cultural resources can serve as educational tools for imparting knowledge about lifeways, building styles, and art forms of past people to the general public, and can be active, important locations of traditional practices conducted by modern people.

Historic and cultural resources were not mapped as part of the Conservation Framework. However, the Cultural Resources Sub-committee of the Partnership, guided by expert opinion, has developed preliminary conservation priorities for these resources. Research is underway to assess the cultural resources in parts of the region. As the database develops, elaboration of these priorities and further objectives will likely occur. Laws governing cultural resource protection are summarized in **Appendix H**. Current priorities include conservation of:

- Traditional Native Lands – The BRBNA served as the traditional homelands of the Wintun-speaking people: the Wintu, Nomlaki, and Patwin, as well as the Pomo, Lake Miwok, and the Mayacamus (Wappo).
- Lands that are examples of the BRBNA's regional history including areas of early non-Native American settlement and the history of mining in the region
- Sites that are threatened due to erosion, vandalism, or looting
- Sites that are subject to development threat
- Sites that can meet multiple-use objectives (e.g. cultural resource conservation and recreation)

CHAPTER 6: CONSERVATION STRATEGIES AND OPPORTUNITIES

Future conservation of the BRBNA's natural, cultural, agricultural, and recreational resources lies in the hands of the agencies and organizations charged with that responsibility as well as the people who live, work and play in the BRBNA. Many of these stakeholders already participate in the BRBNA Conservation Partnership. As conservation efforts move forward, the Partnership hopes that many more individuals and groups will join its efforts to not only enjoy but to conserve, protect and enhance the BRBNA for future generations. Presented here are some of the many avenues for participation and some of the tools that can be employed for conservation purposes. Through cooperative efforts, the Partnership can meet the challenges ahead and achieve the conservation vision for the BRBNA.

CONSERVATION STRATEGIES

A fundamental component of the BRBNA Conservation Framework is identifying and promoting individual and collaborative strategies for partners, stakeholders and others to achieve the conservation vision and provide long-term stewardship of the BRBNA. These strategies include:

- Research and Planning
- Land Protection
- Stewardship
- Sustainable Economic Development
- Outreach and Education

Research and Planning

A key role for the Partnership has been to link research to conservation objectives and continue to promote research on topics where it is most needed. Collecting baseline data has been one important objective in order to establish the existing condition of resources and conservation values of the BRBNA. The vegetation mapping project has provided a wealth of information to guide protection and stewardship programs in the region. Ongoing research and monitoring can also begin to fill the gaps in information and document changes from impacts and restoration efforts. New data can assist resource managers in their efforts to develop policies, plan conservation strategies, and design technical assistance programs. Biologists and other researchers at U.C. Davis and the McLaughlin Reserve have lead the way in establishing a significant compendium of research while they continue to investigate and publish on

important topics for the region. Research on cultural resources is also underway by archeologists at Sonoma State University, the BLM, and others.

Good planning is essential in implementing many conservation efforts. Many agencies and organizations have plans that address lands specific to their region or county. Counties have General Plans, Land Trusts often have strategic plans, and agencies typically have management plans. To the extent possible, this draft framework incorporates and reflects those plans. Ensuring the full integration and consistency of these plans relative to the conservation vision of the BRBNA as a whole is worthy of attention and an important role for the Partnership (see **Appendix I** for a complete list of existing plans and reports).

Land Protection

Land protection is an important part of a long-term conservation strategy. The BRBNA includes a combination of public conservation and recreation lands, semi-public conservation lands, and private property. Identifying strategic parcels for protection, ensuring ongoing communication with landowners and developers, and networking with potential partners about land saving opportunities are essential elements of land protection.

Land protection tools result in permanent protection of land. These tools can ensure that land is managed in a manner consistent with both the owner's objectives and the conservation and stewardship goals developed for the BRBNA. The three most frequently used strategies for land protection are fee title purchase, conservation easements, and zoning regulations. (See **Appendix J** for more information on the variety of land protection strategies available). Land can be purchased outright by a public agency or land trust in order to permanently preserve the property. A conservation easement is a legal agreement between a landowner and a land trust or public agency that permanently limits uses of the land in order to protect its conservation values. Land protection can also be achieved by enacting new zoning regulations or amending existing zoning to promote land use activities that are compatible with BRBNA conservation goals.

Stewardship

Stewardship involves the active management and caring of land and resources to ensure the health of ecosystems and natural processes over time. While land acquisition and conservation easements can begin the process of protection for some lands, long-term monitoring, restoration, and other types of management are often needed to ensure that resources values are enhanced or preserved. On private lands, particularly those used for ranching, stewardship activities are the major conservation tools available to the landowner to enhance the

productivity and value of their land while achieving BRBNA conservation objectives. Stewardship opportunities for landowners are available in many handbooks developed by agencies and organizations such as RCDs and Cooperative Extension (contact information can be found in **Appendix A**). A few fundamental strategies are key to stewardship efforts in the BRBNA.

Adaptive Management

Adaptive management is a relatively new concept, but one that is increasingly being used in the stewardship community. Adaptive management incorporates research into conservation action, integrating the plans, management and monitoring of conservation efforts so that practitioners can adapt and learn. Through this process, learning from successes and failures allows for continually improving projects and management. The Partnership has from its inception supported a science-based approach to conservation, consistent with the idea of adaptive management.

Protection, Restoration and Enhancement

Protection of important habitat and sensitive species is part of any stewardship program. In the BRBNA, management efforts must consider the best approaches to ensuring such protection on both private and public lands. Obviously, these issues become take on a different perspective with regard to private lands, but through appropriate incentives and stewardship programs, public/private partnerships can develop that provide workable strategies for habitat and species protection across property boundaries. Many landowners with conservation easements on their property have entered into partnerships that implement stewardship efforts. Other landowners work with their county RCDs toward similar objectives. This Framework and its detailed database are already being used as the basis for multi-land owner, multi-agency collaborative stewardship planning and implementation programs for the riparian, grassland, and oak woodland habitats in the Knoxville/Eticuera watersheds north of Lake Berryessa. In the BRBNA, it is critical that the information now available about the occurrence of vegetations types and rare and sensitive species be made readily available and easily accessible to resource managers and landowners alike, and that adjacent landowners work together on their stewardship efforts.

Restoration and enhancement activities provide on the ground solutions to resource issues such as erosion, invasive non-native plant and wildlife species, degraded water quality, habitat protection, and restoration of degraded areas. Specific project efforts generally begin with assessment and planning, followed by implementation and monitoring. Support for collaborative programs in such endeavors is a key Partnership strategy for promoting

stewardship. The Knoxville/Eticuera watershed vegetation management effort currently underway is one example of this collaborative approach. While the U.C. Natural Reserve and Fish and Game are in the third year of a joint program to control Tamarisk in the upper half of the watershed, the NRCS and U.C. Extension have initiated a collaborative effort to develop and implement a vegetation management and stewardship program for the entire watershed, involving a number of agencies, landowners and environmental organizations. Evaluation of prospective management strategies will be based in part on recent research on post fire ecology conducted by a team of U.C. scientists based at the McLaughlin Reserve.

Technical Assistance and Incentive Programs

Many public agencies provide technical assistance to landowners to conduct stewardship activities on their lands. Resource Conservation Districts, U.C. Cooperative Extension and even some non-profits groups provide technical assistance and funding to landowners to carry out projects aimed at erosion control, water quality improvement, fire management, riparian restoration and invasive species control. A key strategy promoted by the Partnership is to help ensure that landowners are aware of opportunities for assistance and that to the degree possible, technical assistance and training are coordinated within the BRBNA. Moreover, successful programs have demonstrated that landowners respond best to incentive programs that pay close attention to their needs and concerns, allow for their full participation in decision-making, and provide tangible benefits in a reasonable time frame. The Partnership is well positioned to encourage further research and outreach to assess the opinions, needs and concerns of BRBNA landowners and help apply this information to relevant programs and projects.

Sustainable Economic Development

Economic variables are often the stimulus to environmental impacts and inappropriate land uses. As mentioned previously, regional growth and its attendant economic impacts could create incompatible pressures for the development of housing and commercial enterprises within the BRBNA. A key strategy for conserving the natural resource values of the BRBNA is to explore avenues for meeting local and regional economic needs in a manner that is both sustainable and beneficial for long-term conservation. Appropriate economic generators such as ranching operations and nature-based recreation add value to the land and provide an enduring rationale for its protection. Economic value can be linked directly with conservation value to create a large constituency of conservation supporters including non-traditional entities such as businesses and local governments.

Maintaining and enhancing the viability of the BRBNA's working ranchlands depends in part on preserving a critical mass of ranches and un-fragmented ranchland acreage. Other important factors relative to the viability of the area's working ranches include ensuring adequate agricultural support services, preventing the subdivision of ranches into estate lots or ranchettes, and promoting ranching and the sale of agricultural products as part of a sustainable economic development strategy for the BRBNA. Zoning that is supportive of agriculture (e.g. large minimum lots sizes with limited allowable development) is also an important part of maintaining agricultural viability. The local community can help support ranching by purchasing local products and supporting zoning amendments supportive of agriculture.

It is also essential that the five counties included in the BRBNA, as well as the local communities that border the BRBNA, derive economic benefits from conservation of the region. Tourists and recreational visitors provide enormous opportunity for local revenue when they purchase food, supplies and overnight accommodations from local businesses. Promotion of nature-based recreation and appropriate visitor services at Lake Berryessa are an important means of directing revenue to local and gateway businesses and communities.

Public and Landowner Outreach and Education

Outreach and education are an essential component of a regional conservation effort as they increase awareness about the values associated with the land and the threats to the BRBNA and build a constituency of defenders and promoters of the region. Through a variety of mediums, the environmental, economic, recreational, agricultural and cultural importance of BRBNA resources can be communicated. Some of the ways the Partnership and its partners can engage and educate landowners and the public include small group meetings, workshops, presentations to community groups, newspaper articles, boat or van tours, guided hikes, brochures, slide shows, Web sites, volunteer monitoring efforts, festivals, and school group activities. The Partnership has conducted significant outreach and educational efforts to date and will continue to expand its outreach efforts related to the Conservation Framework.

Engaging additional private landowners in the conservation of the BRBNA depends largely on an effective outreach and education program. Landowner education can serve to increase awareness among landowners regarding the BRBNA and the connection of their land to the larger region as well as provide information regarding how to implement good stewardship practices. By promoting collaboration and by serving as a clearinghouse for information and publications related to a broad range of land protection and stewardship issues for area landowners, the Partnership can promote voluntary conservation efforts for private land as part of a regional approach to the entire BRBNA.

Educating and involving the general public is also key to the long-term conservation of the BRBNA. Local residents, recreational users, and residents of nearby communities and metropolitan regions need to understand why the BRBNA is worth protecting. Such understanding can generate appreciation and support for conservation efforts. Partners can include and distribute information about the BRBNA and the Partnership through their current educational efforts, when they speak to groups, attend events, and lead hikes. Recreational partners are able to distribute information about the BRBNA, its trails, cultural resources, and recreational opportunities, as well as convey messages about how visitors can be good stewards of the land. In addition these materials can illustrate how to support the efforts of local conservation groups and the Partnership. User education can be further advanced through the use of signage, visitor programs and facilities.

MEETING CHALLENGES THROUGH COLLABORATION AND PARTNER INVOLVEMENT

Conservation of the BRBNA is not possible without the public's support and the combined efforts of the BRBNA's agency, non-profit and private partners. There is significant overlap between the conservation roles that each of these partners play and considerable potential to achieve more by working together. The BRBNA Conservation Framework rests on the assumption that often the greatest conservation benefit can be realized through collaboration (see **Appendix L** for examples of BRBNA collaborations).

The ecological diversity and the range of land uses within the BRBNA make the region unique but also pose conservation challenges related to balancing values and managing multiple uses. These multiple values permeate much of the landscape –working ranches may include significant habitat areas, important trail linkages could occur on private land; or a scenic picnic area could be highly susceptible to erosion. The major conservation issues within the BRBNA pose these types of interconnected challenges in nearly equal measure to ecologically significant lands, working ranches, and recreation areas. Not surprisingly, the best opportunities for collaborative conservation and stewardship arise directly out of these conservation challenges. As the Partnership has demonstrated for nearly a decade, working together offers many benefits – sharing knowledge and resources, increasing efficiency, and minimizing redundancy and conflict. Importantly, it also creates lasting relationships among partners that move conservation forward in immeasurable ways.

BRBNA Conservation Partnership

The Partnership is a tremendous resource to all of those interested in conservation of the region. In addition to monthly coordination meetings where the partners meet to discuss projects and

BRBNA Conservation Framework

proposals within the BRBNA, the Partnership also serves as the nexus of conservation activities within the BRBNA. The Partnership can assist partners or groups of partners with grant proposals, coordinating land protection projects and stewardship projects, mediating conflict, and supporting research efforts. The Partnership also maintains the BRBNA website and an internet listserve to help partners exchange information and improve public outreach efforts.

Residents and Visitors

Residents of the BRBNA who live in subdivisions are encouraged to become stewards in their backyard and neighborhood by conserving water, landscaping with native plants, avoiding the use of pesticides and herbicides, and supporting local regulations that protect resources. Individuals can also participate in the Partnership, as well as join and volunteer with local land trusts and stewardship groups. Property owners can prepare formal or informal management plans for their land and resources and provide permanent land protection through conservation easements, or the sale or donation of land for conservation purposes.

Ranchers and Agricultural Landowners

Ranchers and agricultural landowners can implement principles of sustainable agriculture, control erosion, protect riparian areas from cattle, and remove non-native exotic species from their property. Ranchers and agricultural landowners that participate in the Partnership include the Gamble Ranch, Yolo Land and Cattle, the Livermore Ranch, Todd Ranch, Guenoc Ranch, and the Gunn Ranch.

Businesses

Businesses within the BRBNA can also participate in conservation. Opportunities include conserving water, properly disposing of any hazardous waste the business may generate, and providing in-kind or funding support for conservation efforts. Businesses in gateway communities can also join efforts to ensure that economic development is sustainable and directed to benefit local enterprises.

Nonprofit Organizations, Stewardship Groups and Academic Institutions

Nonprofit organizations, stewardship groups and academic institutions are able to participate in education, advocacy, land protection, scientific research and monitoring, and restoration and enhancement. Their efforts to better understand and advocate for these sensitive environments are often combined with other aspects of planning, management, and outreach.

Counties

Counties can assure that their General Plans and land use policies continue to support the conservation of the BRBNA and seek to coordinate those plans and policies with the management plans of the area's State and Federal land management agencies.

Gateway Communities

The gateway communities surrounding the BRBNA are encouraged to examine ways that they and their residents can capitalize on the opportunities to provide BRBNA visitor related services.

State and Federal Agencies

State and federal agencies administer programs, set policies, and revise regulations for their respective lands within the BRBNA. All such agencies are encouraged to continue to coordinate their actions with other governmental agencies, nonprofit organizations, stewardship groups, academic institutions and with local governments and communities. These agencies can provide assistance and help facilitate stewardship activities on state and federal lands within the BRBNA and provide technical assistance, review proposed projects, provide grant support, and coordinate with other partners.

CONCLUSION

This *Conservation Framework* has grown out of a concerted effort to work toward a conservation vision of the BRBNA – a vision based upon good science, inclusiveness of all stakeholders, and the collaboration and voluntary participation of the members of the Partnership. The hope is that this work will be greatly enhanced through the implementation of the Framework and the increasing opportunities for conservation measures it recognizes and promotes. As one of California's most biologically significant landscapes, the BRBNA presents both a challenge and an extraordinary opportunity for coordinated public/private conservation programs. Involvement of the broad array of interests – from landowners to policy-makers, from hunters to environmentalists – will determine our ability to resist the growing threats posed by population growth and development. This Framework is intended to be a tool that we can all use as we coordinate our efforts to make the Blue Ridge Berryessa Natural Area vision a reality.