



*Open Space and Natural Resource Plan*

## **Open Space Inventory and Assessment**

*Prepared for*

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## TABLE OF CONTENTS

<b>1. INTRODUCTION AND BACKGROUND.....</b>	<b>1-1</b>
1.1 BACKGROUND FOR THE PLANNING EFFORT.....	1-1
1.2 INTRODUCTION: PURPOSE AND ROLE OF THE REPORT.....	1-1
<b>2. RESOURCE SCAN.....</b>	<b>2-3</b>
<b>3. INVENTORY AND MAPPING.....</b>	<b>3-5</b>
3.1 UNIQUE GEOLOGIC FEATURES.....	3-5
3.1.1 Scenic Areas.....	3-5
3.1.2 Areas of Steep Slopes.....	3-6
3.2 AREAS OF CRITICAL ENVIRONMENTAL CONCERN.....	3-6
3.3 CULTURAL RESOURCE AREAS.....	3-7
3.4 UNIQUE WATER RESOURCES.....	3-8
3.4.1 The Truckee River Corridor.....	3-8
3.4.2 Steamboat Creek.....	3-9
3.4.3 Major Ditch Corridors.....	3-9
3.4.4 North Valley Playa.....	3-9
3.4.5 Washoe Lake.....	3-10
3.4.6 Pyramid Lake.....	3-10
3.4.7 Lake Tahoe.....	3-11
3.4.8 Wetlands.....	3-11
3.4.9 Floodplain Zones.....	3-11
3.4.10 Geothermal Areas.....	3-12
3.5 RECREATIONAL OPPORTUNITIES AND CONNECTIVITY.....	3-12
3.5.1 Public Lands.....	3-12
3.5.2 Tribal Lands.....	3-13
<b>4. ASSESSMENT.....</b>	<b>4-14</b>
4.1 UNIQUE GEOLOGIC FEATURES.....	4-14
4.1.1 Scenic Areas.....	4-14
4.1.2 Areas of Steep Slopes.....	4-14
4.2 AREAS OF CRITICAL ENVIRONMENTAL CONCERN.....	4-15
4.3 CULTURAL RESOURCE AREAS.....	4-15
4.4 UNIQUE WATER RESOURCES.....	4-15
4.4.1 The Truckee River.....	4-15
4.4.2 Steamboat Creek.....	4-16
4.4.3 North Valleys Playa.....	4-17
4.4.4 Wetlands.....	4-17
4.4.5 Floodplain Zones.....	4-17

**TABLE OF CONTENTS (CONTINUED)**

4.5 RECREATIONAL OPPORTUNITIES AND CONNECTIVITY.....4-17

DRAFT

**ACRONYMS**

ACEC	Area of Critical Environmental Concern
BLM	Bureau of Land Management
GIS	Geographic Information System
NDOW	Nevada Department of Wildlife
NWI	National Wetland Inventory
OHV	Off Highway Vehicle
PMU	Sage Grouse Population Management Unit
ROSP	Reno Open Space Plan
SRT	Science Review Team
SWReGAP	Southwest Regional Gap Analysis Project
USFS	United States Forest Service
WAPT	Wildlife Action Plan Team

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# 1. INTRODUCTION AND BACKGROUND

## 1.1 BACKGROUND FOR THE PLANNING EFFORT

Open spaces and natural resources are an integral part of life in Washoe County. From the early history of the region and the promise of a new life in the West, to the captivating beauty of the canyons and mountains, Washoe County has been defined by what the natural world has provided here. For this reason, the Southern Washoe County Regional Open Space and Natural Resource Management planning effort was initiated at the beginning of 2007 to assess and plan for how to manage these resources. It is at once an effort to update the 1994 Washoe County Regional Open Space Plan and create a new Natural Resource Management Plan for the southern portion of Washoe County. The study area addressed in this report includes all of Washoe County south of the northern shores of Pyramid Lake (See Figure 1) and south to Carson City. This planning effort represents phase one of a long-term effort to create open space and natural resource management plans for the entire county.

The study area includes the county's urban areas, private lands, public lands, and in some areas a mix of public and private ownership. The region includes extensive tribal lands as well. The multiple ownerships and uses have resulted in an increase in competition for resource and open space use. From expanding urban centers and communities, to increased water consumption, and outdoor activities, the region's open space and natural resources are experiencing more pressure and use than in the past. This plan strives to both create a way to best share the experiences and values from the landscape, and conserve them for future use. For everyone in the county, the wide open spaces, striking natural skylines, rich natural and cultural history, and unique ecosystems all make Washoe County a special place for those who call it home.

Preserving this natural value is not without challenges and choices. This plan is not meant to serve as a static inventory of resources and tools— it is a plan for action to maintain, conserve and restore the open spaces and natural resources of the region. To do so the project team assessed the existing state of open space and natural resources, and developed a future vision and set of principles to guide current and future efforts to plan for and manage these resources. Using an extensive technical and public involvement process, development and analysis of scenarios for achieving this vision led to choices about how to manage these resources. Finally, an implementation strategy was prepared with the County and its planning partners within the region to provide the necessary support and tools to ensure the plan achieves its stated vision over time.

## 1.2 INTRODUCTION: PURPOSE AND ROLE OF THE REPORT

Three inventory and assessment reports were prepared for the plan.

- Natural Resources
- Open Space
- Parks and Recreation

The reports are based on the best available science and studies at this time. No new data was collected, but local resource managers, academic researchers, and local stakeholders and user groups were consulted to bring the best information to the plan. The three reports are crafted to be stand-alone documents that support decision-making and planning on the topics they covered. These reports provide the framework for the plan and by including the detailed

assessments here the plan itself is more reader friendly. Because these three reports are meant to be read independently, there is some overlap between them. Open space, natural resources, and park and recreation all share some components that are addressed in each, though often through different perspectives.

These reports are intended to help the project team develop scenarios for testing local values about resources and assess management options. These scenarios in turn, will form the basis for physical and policy recommendations and the final implementation strategy.

It is the project team's intent that these reports will serve future planning and decision-making efforts in the county by serving as a starting point for how to assess resources and issues in the region in other planning efforts. Finally, the reports serve as a platform for revisiting the Open Space and Natural Resource Plan as it is reevaluated and updated periodically in the future.

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## 2. RESOURCE SCAN

Open space for this project is defined as “Undeveloped land with significant natural, cultural and visual resources that is integral to Washoe County’s quality of life.” To this end, areas with significant cultural, scenic, and recreational values are assessed and evaluated within this document to help guide resource protection and stewardship decisions. The resource values considered here include:

- unique geologic features
- areas of critical environmental concern
- unique water resources
- cultural resources
- recreational opportunities
- community shaping open space
- urban open space

Threatened or endangered species and areas of significant habitat are considered in a companion inventory and assessment report.

Washoe County’s GIS data is the source for all mapping presented in this report in cooperation with Federal, State and local partners. Coverage and adequacy of the data are summarized below

**Unique geologic features:** Map data include topographic relief, which allows for the identification of major mountain ranges, ridgelines and valleys, and for the identification of significant peaks. Additional scenic areas that may be important to the planning effort are expected to be identified by the Science Review Team involved in the planning process. This data also allows for identification of areas with steep slopes.

**Areas of Critical Environmental Concern:** The Areas of Critical Environmental Concern (ACEC) program is managed by the Bureau of Land Management. The ACEC program was conceived in the 1976 Federal Lands Policy and Management Act which established the first conservation mandate for the BLM. The ACEC mandate directs the BLM to protect important riparian corridors, threatened and endangered species habitat, cultural and archeological resources and unique scenic landscapes throughout the Southwest that the agency believes need special management attention. GIS data provided by the County identify locations of five Areas of Critical Environmental Concern.

**Unique Water Resources:** Map data include the Truckee River and tributary streams and drainage-ways, lakes, wetlands, extents of the 100-year and 500-year floodplain, and locations of known geothermal resources and wells. Wetland data appear to have been derived from the National Wetland Inventory data set, but the date is unknown.

**Cultural resources:** Map data include general locations for significant concentrations of archaeological and historic resources. The polygons represented on the maps should not be interpreted as *exact areal extents* of resource locations, but rather more *general locations* where significant concentrations of resources have been found. Much of the project area has not been formally surveyed, so it is likely that additional concentrations of resources may be found at other locations. Additional locations for cultural resources and uses are known to

tribal representatives and archaeologists who have been studying these sites. Formal consultation with these representatives will be necessary to identify additional site locations so these areas may be protected, without necessarily mapping these areas and revealing their locations.

**Recreational opportunities:** Map data allow for the identification of Federal, State, and local open space, wilderness areas, parks, and trail connections. The data also identify additional privately-held lands that, if conserved in some manner, would provide important connections between open space or park areas.

Other source documents examined include:

- *Washoe County Comprehensive Plan, Conservation Element* (draft update, 2006)
- *Washoe County Comprehensive Plan, Area Plans and Specific Plans* (various dates)
- *Washoe County Regional Open Space Plan* (1994)
- *Natural Resources Portion of Truckee Meadows Regional Plan* (2006)
- *2004 – 2025 Washoe County Comprehensive Regional Water Management Plan* (2005)
- *Nevada Natural Resources Status Report* (2002)
- *“Living River” Plan, Truckee River Flood Management Project* (2006)
- *Steamboat Creek Restoration Plan* (PowerPoint presentation summary, 2006)
- *Reno Open Space and Greenways Plan* (2007)

### 3. INVENTORY AND MAPPING

This inventory section describes the location and extents of each of the resources listed above. As the pace of development continues, the supply of land with suitable or desirable features continues to diminish. Preservation of lands with significant scenic, hydrologic, cultural, and recreational qualities and features is necessary to maintain the County's quality of life.

#### 3.1 UNIQUE GEOLOGIC FEATURES

Topographic and scenic areas can include visually significant mountain ranges, ridgelines, or individual mountain peaks, as well as the valley floor. They form a significant backdrop and contrast to the more urbanized portions of the County and are a part of the day-to-day "visual experience" for both residents and visitors. If these areas were to fully develop, the quality of this experience would change dramatically.

##### 3.1.1 Scenic Areas

Figure 2 illustrates major scenic areas identified through County GIS data, as well as suggested by the general public during an initial planning workshop. Major scenic areas, working clockwise around the map beginning at the southwest edge of the planning area, include:

- *The Mt. Rose Wilderness Area*, which encompasses over 28,000 acres and includes 14 distinctive mountain peaks within the Carson Range. This area is a distinctive "landmark landscape" southwest of Reno and its scenic quality was cited by the general public.
- *Peavine Mountain*, north and west of Reno, and which includes both Peavine Peak as well as nearby South Mountain. The southern face of Peavine Peak is in private ownership and the public has raised concerns about impacts to this resource if this area is allowed to develop further.
- *The Peterson Mountains*, which span the border between Nevada and California, north and west of Reno, and which include the Peterson Mountains Natural Area.
- *Pyramid Lake*, which encompasses 188 square miles and which is one of the largest lakes in the United States. The lake is the largest remnant of ancient Lake Lahontan that covered much of northwestern Nevada at the end of the last ice age.
- *The Dogskin Mountains*, which are visible to the west from the Pyramid Highway and which also have cultural significance.
- *The Virginia Mountains*, which are visible along the western edge of Pyramid Lake.
- *Hungry Valley*, which parallels the Pyramid Highway and which also has cultural significance.
- *The Pah Rah Range*, to the south of Pyramid Lake.
- *The Truckee River*, which flows from west to east and provides a visual experience of "nature in the City," especially in its easternmost reach through the City of Sparks.
- *The Virginia Range*, which lies on the southeast side of Truckee Meadows and which form the southeast boundary of our planning area. These foothills, sparsely vegetated in sagebrush and pinon pine/juniper communities, form a very significant backdrop and edge to the County. Also on the east side is the *Huffaker Hills*, including

privately-owned *Rattlesnake Mountain*, a very significant and recognizable feature within the foothills.

- *Steamboat Creek and the “Steamboat Bottoms.”* This area is a unique interface between the valley floor and the foothills. The original marsh or bog is the low point in the Truckee Meadows, and was one of the first sights to greet wagon trains as they wound their way up the Truckee River. The Overland Emigrant Trail, which followed the base of the Virginia Range, then along the Huffaker Hills to southwest Truckee Meadows, is still visible in this area in selected locations.
- *Washoe Lake and Washoe Valley*, on the southern edge of the project area.
- *Lake Tahoe*, at the far southwestern edge of the project area.

### 3.1.2 Areas of Steep Slopes

In addition to significant physiographic features, the locations of steep slopes (slopes greater than 15 percent, and slopes greater than 30 percent) were also mapped. Because slopes greater than 15 percent can be challenging development sites, due to erosion potential as well as visual impacts associated with building on ridgelines or foothill flanks, these locations were identified as possible future candidates for preservation. Within Washoe County, slopes greater than 30 percent are deemed unsuitable for development.

Figure 2 also illustrates this analysis. As suggested by the mapping, foothills on the eastern and southern flanks of the Pah Rah Range, and smaller extents of foothills within Lemmon Valley, Hungry Valley, constitute slopes within the 15 to 30 percent category; to the extent that these lands are held privately, they may at some point be slated for development.

## 3.2 AREAS OF CRITICAL ENVIRONMENTAL CONCERN

Figure 3 shows the approximate locations of five Areas of Critical Environmental Concern that have been identified within the planning area. These include:

- An area of *Incandescent Rocks*, which are for the most part rhyolitic or dacitic rocks called flowdomes that are volcanic in origin.
- An approximately 243-acre habitat zone for the *Carson Wandering Skipper*, one of four Federally-listed species in the project area.
- The 3,881-acre *Pah Rah High Basin (Dry Lakes) Petroglyph District*, located east of Sparks and containing significant archaeological resources.
- The *Steamboat Buckwheat*, which occurs only on the geothermally-derived “sinter” soils at Steamboat Hot Springs and which was Federally-listed in 1986, when faced with increasing threats to its habitat from development. The 40-acre ACEC also protects the geothermal resources that underlie the area. A Memorandum of Understanding (MOU) for recreational development (interpretation, picnic areas, and pedestrian traffic) of the Steamboat ACEC exists between the BLM Carson City District and Washoe County Parks and Recreation Department (BLM 1983).
- The 473-acre *Virginia Range Williams Combleaf Habitat Area ACEC*. Williams Combleaf is listed as critically endangered by the State of Nevada.

The map shows general locations where these species have been sighted. Polygons should not be interpreted as depicting the entire areal extent of these species.

### 3.3 CULTURAL RESOURCE AREAS

There are presently over 5,000 known cultural sites in southern Washoe County. Most of these sites have not been formally surveyed or studied, so the map shown in Figure 4 illustrates where there are major **concentrations** of archaeological and historic resources. Because of concerns about possible resource degradation, the map also shows general areas and not specific locations.

Areas with significant concentrations of resources include:

- *Warm Springs Valley.* Archaeologists have identified numerous archaeological sites, all relating to the Archaic period occupation of the area, and including lithic debris, groundstone and hearths.
- *Hungry Valley.* Lithic scatters are evidence of the prehistoric occupation of this area.
- *Spanish Springs Valley, along the Pyramid Highway.* This area includes both archaeological and historic sites. At one time the area included a marsh, and the sites provide evidence of use of marsh resources.
- *Spanish Springs Canyon.* The canyon and surrounding area constitute the site of two dry lake beds surrounded by basalt outcroppings. The outcroppings are covered in petroglyphs and contain rock circles and hunting blinds.
- *Peavine Mountain.* This is the site of historic Poeville, where some 1,500 people lived during the mid-1860s, mining gold and silver. Many artifacts reflect this mining activity. Basque shepherders left carvings on the aspens, marking their passage through the area. Archaeological sites occur in the canyons.
- *Truckee River Corridor.* This corridor includes both archaeological and historic resources. Fishing camps, residential base camps and rock art are found along the length of the river. As the area was gradually settled beginning in the 1840s and continuing through the 1870s, the river became the locus of commercial activity, farming and ranching.
- *Steamboat Creek.* This corridor also includes evidence of prehistoric settlement, including archaeological artifacts, rock art, seasonal camps, and permanent residential sites. Occupation seems to have been heaviest during late Archaic times. South of the Mt. Rose Highway junction, sites along the creek are larger and reflect more intensive use, probably as winter camps. This was likely due to the perennial water source, the bog and wetland area which provided materials for baskets, and the plentiful supply of game.
- *Huffaker Hills.* Lithic scatters with groundstone, game fences and hunting blinds are evidence of prehistoric settlement. A historic ranch is also located in this area.
- *Double Diamond Ranch.* This area includes over 20 archaeological sites, with lithic scatters, groundstone, and hearths.
- *Steamboat Quarries.* These were created by people exploiting naturally-occurring basalt and sinter debris, to fashion into tools.
- *Galena Town Site.* This was principally a lumber camp established in 1860 to support the Comstock Mines. Silver ore was also found in this area. Eleven sawmills were in operation by 1863, but by 1867 the town had been destroyed by fire.

- *Washoe Lake.* The entire lake is considered an archaeological district. The dunes on the eastern shore contain lithic scatter, bones, hearths, burial areas, and a Clovis point. In more modern times, Washoe City was founded on the northern shore, and several thousand people inhabited the City in the mid-1860s. When the Comstock sawmills closed, and population began to decline to fewer than 200. A few residences remain along with remnants of old foundations.
- *Jumbo Town Site and Mining District.* This area was developed between 1908-10, during the early 20<sup>th</sup> century mining boom, but produced very little. A few wood structures and mining elements remain.
- *Hobart Reservoir, Franktown Creek, and Little Valley.* In 1853, Mormon farmers founded Franktown. In the early 1860s, the demand for lumber in the nearby mines resulted in establishment of sawmills. Hobart Reservoir is part of the Marlette Water System constructed in 1873 to carry water to Virginia City. Many of the residences, and the Marlette Water System, are eligible for the National Register.

Figure 4 also shows grid locations where some survey mapping has been completed, and some resources have been found, according to GIS data supplied by Nevada's State Historic Preservation Office (SHPO). These should be taken as general indicators of where resources have been discovered, but the data do not indicate exactly where resources have been found within the grid, nor the quantity and significance of the discovery. Readers will also note that many areas remain unmapped, so the potential for future discovery of additional resources in these areas remains untapped.

### 3.4 UNIQUE WATER RESOURCES

Figure 5 shows the locations of major hydrologic and surface water resources found within the project area.

#### 3.4.1 The Truckee River Corridor

The Truckee River flows approximately 100 miles from its source at Lake Tahoe, through Reno and Sparks to its terminus at Pyramid Lake. It includes many valuable resources, including wetlands, a natural floodway, fish habitat, an important natural and scenic corridor within the heart of the cities for Reno and Sparks, and an important source of drinking water for the communities that surround it.

The Truckee River is the most significant natural resource in the plan area. Native riparian habitat still exists along much of the river, supporting associated animal species. Oxbow Nature Study Area, a largely intact segment of river habitat, supports populations of beaver and muskrat, as well as numerous bird species. A number of more developed parks along the river include both native riparian habitat adjacent to the river, and nearby developed areas with non-native, ornamental plant species.

Fish habitat within the corridor has become degraded due to water diversion and sediments carried by urban runoff. In the past, it had provided habitat for at least eight native species of fish, which had unimpeded access from Lake Tahoe, all the way along the river to Pyramid Lake. The original strain of Lahontan cutthroat has now been extirpated and the prehistoric cui-ui, a non-game fish is listed as threatened.

Fish presently found within the river include native and non-native species, including brown trout, Lahontan cutthroat trout, rainbow trout, mountain whitefish, large-mouth bass, black crappie, and channel catfish. Major threats to habitat are chemical pollution carried by urban runoff. Nutrients also enter the river due to runoff from construction sites and from treated

wastewater discharged from the Reno-Sparks Wastewater Treatment facility. Channel straightening, loss of vegetation along the streambank that might have provided shade, and stream flow regulation have all combined to increase water temperatures that make it challenging to sustain a cold-water fishery. As a consequence, fish like the brown trout, which are more resistant to high temperature and degraded water quality, have come to dominate aquatic species.

### 3.4.2 Steamboat Creek

Steamboat Creek has historically been a valuable water resource and provided early settlers with water for agricultural uses. The creek originates at the outlet of Little Washoe Lake and meanders for 17.5 miles to the Truckee River. The Steamboat Creek Watershed encompasses approximately 200 square miles in Washoe County

Steamboat Creek has been used in the Reno area for a variety of reasons over the years that include both agriculture and mining. This use has led to some environmental damage and concern. Steamboat Creek is the largest non-point source of pollutants discharged into the Truckee River, including naturally occurring arsenic and boron. Some pollutants, like mercury, are a result of historic mining activities. Much of the pollution is derived from several sources including livestock manure, residential and other uses of fertilizers and urban runoff from Reno.

Steamboat Creek is recognized as a significant resource to the Reno area and as a result a restoration plan was created to repair and control the pollution to this water way. The Steamboat Creek Restoration Plan emphasis maintaining public access to the creek while providing residents an opportunity to learn about this resource and ways they can help to protect it. The plan also focuses on working with adjacent land owners to prevent damage and reduce pollution. The Steamboat Creek Restoration Plan has been implemented on sections of the creek and continues to be implemented with the help of residents and adjacent landowners.

### 3.4.3 Major Ditch Corridors

Figure 5 also illustrates the locations of an extensive system of irrigation ditches that have supplied water to agricultural operations within the Truckee Meadows area. While many of these ditches are no longer active, they can provide a framework for a recreational trails system, and so should be studied further.

### 3.4.4 North Valley Playa

Three playas, White Lake, Silver Lake, and Swan Lake, are located in the North Valleys area. Desert playas are valley bottoms where seasonal water collects in pools during periods of high precipitation or run-off, but which have little or no water during drier portions of the year. Playas that have a perennial source of water, such as Swan Lake, may shrink in size but not go completely dry.

All three playas provide watershed functions, wildlife and native plant habitat, opportunities for connectivity, and recreational opportunities. The setting, characteristics, and open space opportunities for each playa are described below.

- *White Lake.* White Lake is bordered by residential development on the north with sporadic commercial and light industrial development to the east and south. The lake is owned by a limited number of private landowners. The undeveloped land surrounding White Lake is a mixture of seasonal wetland and sage scrub. White Lake

provides significant groundwater recharge and watershed protection value, offers visual relief, and serves as a large open space node with potential corridors connecting to Peavine Peak and the surrounding hills.

- *Silver Lake.* Silver Lake is bordered by residential development to the north and south, with light industrial and commercial development to the east. Silver Lake and the lands around it will soon be owned by Washoe County. Silver Lake offers groundwater recharge value, and includes a sage scrub zone.
- *Swan Lake.* Swan Lake is bordered by low density residential development. The playa ranges from 50 to 100 acres of permanent wetlands during drought cycles to as much as 1,000 acres of wetlands during high water cycles. The lake is primarily publicly owned by the BLM, Washoe County, and Nevada National Guard, with the remaining property consisting of private in-holdings. Effort has been made in recent years to acquire private parcels from willing sellers using conservation funding.

According to the Lahontan Audubon Society, Swan Lake is an important bird area, with 150 recorded bird species, including unusual migrants such as tundra swans and snow geese. The lake serves as an important nesting site for resident birds, and a foraging site for winter migrants. Large numbers of shorebirds and wading birds depend on Swan Lake as a migration stopover, staying days to weeks as they forage in the shallow waters. The Lemmon Valley Sewage Treatment Facility system of ponds immediately adjacent to the lake also provides nesting, feeding, and migratory resting areas for significant bird populations, especially when Swan Lake is frozen over during the winter months.

### **3.4.5 Washoe Lake**

Washoe Lake is fed by several small streams which issue from the Virginia Range to the east and the Carson Range to the west. It drains into Steamboat Creek, which runs north to the Truckee River, although much of the water is diverted for irrigation use. It is a very shallow lake, and the surface area can vary greatly from year to year. There is also an important bird breeding and nesting wetland mitigation area located at the south end of the lake.

Washoe Lake State Park was established in 1977 to preserve a portion of scenic Washoe Valley for future generations to enjoy, with land and water-based recreation. Activities in the park include nature study, bird watching, hiking, horseback riding, picnicking, windsurfing, water skiing, catamaran sailing, jet skiing and fishing. A campground, boat launches, group use area, day-use picnic sites and equestrian trailhead are available.

### **3.4.6 Pyramid Lake**

Pyramid Lake is one of the largest terminal lakes in the US, approximately 188 square miles in area. It is fed by the Truckee River, which enters the lake from its southern end. It has no outlet, with water leaving only by evaporation, or sub-surface seepage. The lake is the largest remnant of ancient Lake Lahontan that covered much of northwestern Nevada at the end of the last ice age. Pyramid Lake was the deepest point in Lake Lahontan, reaching estimated 890 feet due to its low elevation level relative to the surrounding basins. In the 19th century the vicinity of the lake was inhabited by the Paiute. The lake is now completely within the Pyramid Lake Indian Reservation.

Major fish species include the cui-ui lakesucker, which is endemic to Pyramid Lake, and Lahontan cutthroat trout. The former is endangered, and the latter is threatened. Diversion of the Truckee for irrigation since the early 20th century has reduced inflow such that it is rarely

sufficient for spawning in modern times. Fish populations are now sustained by several tribally-run fish hatcheries.

The name of the lake comes from the tufa formations nearby. The largest such formation, Anaho Island, is home to a large colony of American White Pelicans and is highly restricted for ecological reasons. Access to the Needles, another spectacular tufa formation at the northern end of the lake has also been restricted due to recent vandalism.

### **3.4.7 Lake Tahoe**

Lake Tahoe spans the states of California and Nevada, with approximately two-thirds of the shoreline located in California. The south shore is dominated by the lake's largest city, South Lake Tahoe, California, which adjoins the town of Stateline, Nevada, while Tahoe City, California is located on the lake's northwest shore. Many important parts of the shoreline now lie within state parks or are protected by the United States Forest Service. California and Nevada reached the compromise to partition Tahoe between the two when California became a state.

Lake Tahoe is the second deepest lake in the United States, with a maximum depth of 1,645 feet. The lake is known for the clarity of its water and the panorama of surrounding mountains on all sides. The Lake Tahoe Basin was formed by a geologic block (normal) faulting about 2 million years ago. Modern Lake Tahoe was shaped and landscaped by scouring glaciers during the Ice Ages, which began a million or more years ago. Many streams flow into Lake Tahoe, but the lake is drained only by the Truckee River, which flows northeast through Reno, and into Pyramid Lake, which has no outlet.

In spite of land-use planning and export of treated wastewater from the basin, the lake is becoming increasingly eutrophic (having an excessive richness of nutrients), with primary productivity increasing by more than 5% annually, and clarity decreasing at an average rate of 0.25 meters per year. Fine sediment, much of it resulting from land disturbance in the basin, accounts for about half of the loss in clarity.

### **3.4.8 Wetlands**

Freshwater marsh and wet meadow are the most significant types of wetlands found in the County. In some instances, valley areas contain scattered small potholes and an occasional salt marsh. Wetlands and potential wetlands are scattered throughout the County. In the southern portion, they include the Washoe Lake area in Washoe Valley, southern Spanish Springs Valley, portions of the Southeast Truckee Meadows along Steamboat Creek, and the Truckee River Delta at Pyramid Lake.

Wetlands are a valuable natural asset to Washoe County. They can provide natural flood control such as in the Southeast Truckee Meadows, a habitat for fish and wildlife resources, and serve as sediment traps and pollution filtration systems. Wetlands also offer visual relief from large expanses of dry and barren land and provide recreational sites. However, urban and agricultural demands for land and water can easily disrupt these fragile areas.

### **3.4.9 Floodplain Zones**

Figure 5 also illustrates the extents of the 100-year floodplain, based on Federal Emergency Management Agency (FEMA) mapping. The most significant area as shown on the map is the "University Farms" area, which has been managed by the University of Nevada-Reno as an agricultural experimentation station, and which is very important for flood water storage for the Truckee River Flood management program. A second significant expanse follows

Steamboat Creek, extending on either side of US 395, through Pleasant Valley. A third is found along the wetland complex in Spanish Springs, and extends west across the Pyramid Highway. Smaller areas are found at the perimeter of each of the playa lakes.

### **3.4.10 Geothermal Areas**

The U.S. Geological Survey has identified six major geothermal areas in Washoe County. These are Steamboat Hot Springs, Moana Hot Springs, Needles Rocks, Gerlach Hot Springs, Ward's Hot Springs, and San Emidio Desert Hot Springs. In addition to these major geothermal sites, many minor sites exist at various locations throughout the County. The more notable of these smaller geothermal sites include Lawton Hot Springs, Wedekind Mine, Bowers Hot Springs, and Pleasant Valley. Six major geothermal sites have varying degrees of potential for development. Limiting factors for some sites being their remote locations away from roads and other transportation facilities.

## **3.5 RECREATIONAL OPPORTUNITIES AND CONNECTIVITY**

### **3.5.1 Public Lands**

Figure 6 illustrates the extents of public lands in southern Washoe County, with much of this land formally designated, or informally used, for various types of recreation. Publicly owned lands encompass approximately 58 percent of the land area in Southern Washoe County.

The State of Nevada, through its Division of State Parks, and Division of Wildlife, owns just over 35,000 acres of land on the south and east sides of Washoe Lake (Washoe Lake State Park) and on the east side of Lake Tahoe (Lake Tahoe - Nevada State Park).

Federal agencies administer approximately 3,320,483 acres of land in Washoe County and approximately (blank) acres in southern Washoe County. The largest landowner is the Bureau of Land Management (BLM), the majority of whose holdings are located in the North Valleys, along the Dogskin and Virginia Mountains and extending into Hungry Valley. Approximately 63 square miles of Hungry Valley was designated as an Off Highway Vehicle (OHV) area in the 1980s., Recreational uses include camping, hiking, all-terrain vehicle riding, rock crawling, horseback riding, and shooting. BLM estimates daily usage at roughly 300 visits per day, or close to 100,000 visits per year.

BLM also owns land within the Peterson Mountains. Other large areas of BLM ownership are located on the east side of the Pah Rahs, and on the north side of the Truckee River, east of Sparks. A final expanse of BLM land is located east of Pleasant Valley. BLM's holdings are generally well-connected to other public lands, managed by the State or the US Forest Service, or to tribal lands.

The US Forest Service (USFS) Carson Ranger District administers over 200,000 acres of land, primarily in the Carson Range and Humboldt-Toiyabe National Forest, including the Mt. Rose Wilderness. This 31,000-acre area was designated in 1989 and provides opportunities for non-motorized recreation, including camping and hiking. Bicycles and off-road vehicles are prohibited. The USFS also owns approximately 18,000 acres along Peavine Mountain. The many old mining roads provide opportunities for hiking as well as OHV recreation. The south side of Peavine Mountain remains in private ownership, and this has raised concerns regarding access to public lands.

The U.S. Fish and Wildlife Service operates two wildlife refuges in Washoe County, with one of these, Anaho Island, located in Pyramid Lake on the Pyramid Lake Indian Reservation.

Washoe County owns and administers 8,277 acres of parks, open space, greenways, special use facilities (for example, shooting ranges) golf courses (data provided by Washoe County, June 2007). These lands are primarily located within Reno and Sparks, and are discussed in a separate inventory and assessment report on parks and recreation.

### **3.5.2 Tribal Lands**

The Pyramid Lake Indian Reservation covers approximately 306,273 acres and is located in eastern Washoe County. The Paiute Indian Tribal Council administers its lands. Additionally, the Reno-Sparks Indian Colony owns approximately 24.02 acres of land in Spanish Springs Valley and approximately 1,949.39 acres of land in Hungry Valley. The Reno-Sparks Indian Colony Tribal Council administers the land use in those areas.

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## **4. ASSESSMENT**

This section provides a qualitative assessment of the resource areas described earlier, and identifies opportunities as well as pressures or threats facing these resources that may suggest opportunities for additional land protections or alternative management strategies.

### **4.1 UNIQUE GEOLOGIC FEATURES**

#### **4.1.1 Scenic Areas**

Scenic areas encompass many of the County's mountain ranges, valley floors, and significant water bodies. Together, these features define the landscape character of southern Washoe County. While many of these areas are presently in public ownership, either by BLM or USFS, others are privately held and could be developed at some point in the future.

Two of the most significant physiographic features include the Carson Range and Mt. Rose Wilderness, managed by the USFS, and the Virginia Foothills, that form the eastern boundary of the Truckee Meadows including Rattlesnake Mountain and the Huffaker Hills. These latter areas are entirely privately owned and there may be opportunities for protection of some of these areas from development, through ridgeline protection measures or other strategies.

Much of the Pah Rah Range is also privately owned, and located at the edge of the City of Sparks' annexation boundary, so pressures from potential development may ensue. The Virginia Mountains and Dogskin Mountains are presently in BLM ownership, but this could change as BLM's disposal objectives evolve. Given the importance of these areas as mule deer and sage grouse habitat, and the cultural significance of the Dogskin Mountains, this plan may identify strategies for protecting some or all of these areas from development.

A portion of the Peterson Mountains has been designated as a natural area, and other sections are in BLM ownership. Because of this area's significance as habitat, this plan may identify strategies for protection.

Another significant and well-known feature is Peavine Mountain, whose south side is in private ownership. Development at the base of the mountain has in some cases closed off historic access points to the trail and mining road network on the mountain. This plan may provide an opportunity to acquire or protect these remaining private holdings, or if not all, to protect access points along major drainageways, as suggested in the Reno Open Space and Greenways plan. And so does the Peavine Mountain Roads & Recreation strategic plan.

Other significant scenic areas include Washoe Valley, which is facing some threats from development. Opportunities may exist through this plan to identify larger tracts of land that might be protected through acquisition, easement, or other methods, and that would help to preserve the integrity and character of the valley landscape.

#### **4.1.2 Areas of Steep Slopes**

Areas of steep slopes which may be candidates for potential future development, chiefly include the eastern flanks of the Pah Rah Range, as well as selected extents of foothills within Lemmon Valley, Hungry Valley, and the Bedell Flats. Development of these foothill flanks may affect visual and scenic quality, increase the potential for erosion and rockfall, as well as place additional "human pressure" on significant habitat zones, unless protective measures are applied. These may include limiting development in especially sensitive areas, or implementing mitigation measures such as buffer zones or ridgeline protection ordinances.

## 4.2 AREAS OF CRITICAL ENVIRONMENTAL CONCERN

Of the five ACEC areas, all except the Steamboat Buckwheat area are located on lands managed by the BLM. The Incandescent Rocks area is a popular spot for hiking and exploring, and may warrant additional management actions to ensure that public use does not reach a level where the resource is overwhelmed or degraded. This may become particularly necessary as the North Valleys continue to develop. The Pah Rah High Basin petroglyph area, particularly because of its proximity to a highly developed area east of Sparks, may warrant the same type of management attention.

As noted below, there is some degree of adjacency between the ACEC areas and the general locations of archaeological and historic resources, suggesting an opportunity for complementary strategies and possibly the acquisition or protection of additional lands around these areas to provide some level of buffer.

## 4.3 CULTURAL RESOURCE AREAS

The most significant concentrations of cultural resources are found in the Warm Springs area, in Hungry Valley, along the Pyramid Highway in Spanish Springs, and along US 395 and Steamboat Creek, south to Washoe Lake. The areas near Spanish Springs and along US 395 are especially pressured by rapid urbanization. There are also concerns about the potential disposal of lands in Hungry Valley, by the BLM, as well as potential damage to these resources associated with continued OHV use in this area. The Reno-Sparks Indian Colony is also actively seeking to acquire additional lands within the Valley from the BLM.

The Warm Springs, Hungry Valley, Canoe Hill and Pleasant Valley resource areas are located on property owned and managed by the BLM, and three of the four areas are adjacent to ACEC sites, which exhibit a similar level of sensitivity to public use and development. It may be appropriate to consider some level of buffering or other protection from adjacent development, or protections against future disposal.

## 4.4 UNIQUE WATER RESOURCES

### 4.4.1 The Truckee River

Over the last 150 years, more than 30 dams and water supply diversion structures were constructed along the Truckee River. In the 1950s and 1960s, the bed of the Truckee River was blasted, dredged and straightened in an effort to reduce flooding upstream in the Truckee Meadows. Together, these activities heavily affected the river's ecosystem, significantly reducing the native vegetation which had lined the riverbanks, lowering water levels, eliminating critical habitat, and impeding fish spawning in the river. Today, approximately 90% of the riparian forest that existed along the river at the beginning of the 20th century has been lost, along with 70% of the hundreds of species of nesting birds that were once common along the river.

A portion of the Truckee River is now subject to the Truckee Meadows Flood Control Project. This project is intended to restore riparian habitat, while also serving to minimize flood damage and extend recreational access in the area. Key ecosystem restoration goals associated with this project include:

- Restoring 50 miles of the Truckee River's ecosystem (Sparks to Pyramid Lake)
- Restoring fisheries, including the threatened Lahontan Cutthroat Trout and endangered Cui-ui and enhancing deer, mountain lion, duck, and song-bird habitat
- Enhancing water quality
- Providing enhanced recreation opportunities, river access, and open-space

Primary Project components include:

- Obtaining land along Truckee River corridor and re-establishing a sinuous, naturalized river bed.
- Planting cottonwoods and riparian vegetation to jump start re-vegetation, which in turn will provide shade, cooling the water for fish, and providing resting and spawning zones.
- Constructing fish ladders at Marble Bluff, Numana and Derby Dams, and creating “fish holes” to assist with spawning.
- Providing a dedicated instream flow for the river by re-titling water rights, thus ensuring flow during low rainfall seasons and diluting treated water to improve water quality.
- Flood control structures to protect developed areas

A second plan that addresses the Truckee is the East Truckee River Canyon area plan, which primarily applies to the segment that flows east of Sparks and which seeks to restore riparian function, establish setbacks to buffer the river from adjacent development, and provide greenway trails and public amenities. A third plan is the recently-adopted Open Space and Greenways Plan, prepared by the City of Reno, and which emphasizes the value of the river corridor as a “spine” for the larger regional system.

There are opportunities for this planning effort to reinforce and strengthen recommendations contained in both of these plans, through identifying potential land acquisitions (or criteria for acquisition) that could best facilitate river restoration, or that could be used to treat urban runoff from storm flows before it enters the river, or even to provide groundwater recharge. The recent acquisitions along the river by the Flood Management project is an example of such a beneficial acquisition, and while there may not be parcels of an equivalent size to acquire, smaller sites may provide selective benefits. This planning effort can also reinforce the benefits associated with creating a continuous greenway along the river corridor that could function as the centerpiece of County and City trails systems.

#### **4.4.2 Steamboat Creek**

Land in the Steamboat Creek watershed is currently undergoing a transition from agricultural to urban uses. The impacts of land development, water diversion, and bank erosion are increasing nonpoint source pollution. The Nevada Division of Environmental Protection found excessive levels of sediment, nitrogen, phosphorous and trace metals in the Steamboat Creek and included the creek on the state’s list of "target impaired waters." The creek constitutes the largest source of pollution to the Truckee River.

With funding from a Clean Water Act grant, the Washoe-Storey Conservation District initiated the Steamboat Creek Restoration Plan to promote voluntary efforts to improve the creek’s water quality and re-establish vegetation and wildlife habitat. Completed in 1998, the plan provides recommendations and designs for restoration activities, coordinates stakeholder efforts and attempts to increase public awareness and involvement in water quality concerns. The plan focuses on encouraging voluntary implementation of both off-stream and on-stream best management practices (BMPs) by private landowners, who own 98 percent of the land in the watershed.

This plan can complement that effort, again through identifying lands that might be purchased, or to provide a river corridor buffer as well as potential water quality treatment areas, recreational opportunities, and potential groundwater recharge areas.

### **4.4.3 North Valleys Playa**

The playas, especially Swan Lake, are valued for their unique role in the region's hydrology as well as their ecological value. Each of the three is increasingly surrounded by development and may thus face pressures to maintain healthy and viable ecosystems.

The proximity of BLM lands to these areas may offer opportunities for exchange or acquisition of buffer areas around these playas that can help to protect the resource. There may also be opportunities, through reinforcement or extension of proposals made in the Reno Open Space and Greenways Plan, to connect these playas to a larger greenway system, linking them to Peavine Mountain to the south and the Peterson Mountains to the north.

### **4.4.4 Wetlands**

The two largest wetland complexes are located just south of Spanish Springs and in the "Steamboat Bottoms" area along Steamboat Creek. Both areas are developing rapidly. Because of the critical functions that wetlands play in providing riparian habitat, and in water quality, there is an opportunity for this plan to reinforce the need for their protection, and with respect to other areas along Steamboat Creek, to suggest additional areas that might be protected and new wetlands created.

### **4.4.5 Floodplain Zones**

Floodplain zones can offer important opportunities for multi-benefit projects that provide flood storage capacity, potential groundwater recharge areas, water quality treatment, habitat, and passive recreation. The future acquisition of the University Farms property should help to address many of these issues as they pertain to the Truckee River. This plan should also consider potential areas along Steamboat Creek, as well as areas along the US 395 corridor within Spanish Springs.

## **4.5 RECREATIONAL OPPORTUNITIES AND CONNECTIVITY**

While the majority of Washoe County may be in public ownership, opportunities exist through this planning effort to better connect these lands into a cohesive system and ensure that recreational uses are compatible with underlying resource values.

Major opportunities exist to reinforce recommendations in previous planning efforts for the Truckee River and Steamboat Creek, to use both of these waterways as the centerpiece of a regional greenway system. Selective acquisitions that create areas for small parks or natural areas may be appropriate complements to this system. Opportunities also exist to use some of the smaller drainages to connect Mt. Rose Wilderness to Peavine Mountain, and then on up into the Peterson Mountains to the north.

The Hungry Valley area has been used for numerous recreational activities, including OHV use and shooting, since the 1980s. However, there are increased concerns about the compatibility of these areas with adjacent development, and with their cultural uses and significance. A stakeholder working group has been formed to consider whether the area should be designated as a congested area, with changes in management strategies and allowable uses. This plan provides an opportunity for participation in this discussion and for considering alternative locations for some of these activities if they are deemed to be no longer compatible.