

Section 2: Study Area

2.1 Description and Boundaries

The District's fresh water and recycled water facilities are located in northeastern Alpine County on the eastern slope of the Sierra Nevada. Although all operations are within Alpine County, California, the closest urban areas are the towns Minden and Gardnerville located 20 miles north of Alpine County in Douglas County, Nevada. The South Tahoe Public Utility District service area is 25 miles away in El Dorado County, California.

The recycled water system begins at the District's wastewater treatment plant in South Lake Tahoe, where filtered secondary treated wastewater (recycled water) is pumped out of the Lake Tahoe basin along Hwy 89 over Luther Pass to Hwy 88 in Hope Valley then along the West Fork of the Carson River to Harvey Place Reservoir southeast of Woodfords, California. A map of the District's service area boundaries is presented in Figure 2.1 (at the end of Section 2). Recycled water from the reservoir is conveyed in the Diamond Ditch for the irrigation of ranchlands in Wade Valley and to the north along Hwy 88 to the Nevada border.

2.2 Land Use

The general land use patterns in Alpine County reflect the rural agricultural values of the people that first homesteaded much of the area. The County consists of largely government-owned lands, leaving a small portion of the County along the West Fork of the Carson River and Indian Creek and Diamond Valley as privately-owned agricultural lands. Due to elevation and climate, the majority of agriculture is limited to pasture grasses and some alfalfa crops. Few if any crops are grown for human consumption.

Even though there is a long-standing history of family ranching maintaining the rural community lifestyle, there is the possibility of land use change resulting from semi-rural development. A trend of large ranches subdividing into 5- to 20-acre parcels for home sites has been witnessed in the nearby Carson Valley and along the West Fork of the Carson River in Alpine County, California.

2.2.1 Existing Land Use

The existing land use patterns in the study area in Alpine County consist of a mix of low density rural residential and agricultural (open space and mixed rural residential zoning allowing 5 and 10 acre home sites). The area known as River Ranch Estates along the West Fork of the Carson River was once a working ranch but was subdivided and is no longer feasible to flood irrigate with recycled water due to the density of domestic wells and houses. Once the irrigation setbacks specified under Title 22 are applied, too little land is available for irrigation to warrant recycled water irrigation using conventional flood irrigation methods

Fortunately, the largest contiguous tracts of land available for recycled water application are supporting land uses that are consistent with the historic use and supportive of recycled water application. The lands adjacent to District owned lands in Diamond Valley include a mix of Forest Service (USFS), Bureau of Land Management (BLM), Bureau of Indian Affairs (BIA), and some Alpine County owned land. Lands permitted to receive recycled water and lands that may receive recycled water in the future are adjacent to several privately owned parcels, as well as USFS, BLM, BIA and Alpine County-owned land. These lands that irrigate, or have the potential to irrigate, with recycled water are subject to potential change of land use designation in the future; however, this will not affect District operation as buffer zones compliant with regulatory

requirements have been incorporated into the planning of application areas. It is the recycled water user, and not the District, that is ultimately responsible for the proper application of recycled water with respect to buffer zones and recycled water use warning signage.

To date several hundred acres of land have been removed from recycled water irrigation either because of proximity to a surface water of the State or because of rural development, similar to the River Ranch Estates area. The pattern of agricultural lands being converted to residential developments is a common trend in the neighboring Carson Valley, and is also occurring in northern Alpine County.

2.2.2 Areas of Current Development

New development in the south end of Carson Valley and northern end of Alpine County, close to the Nevada-California state line, is changing the land use patterns in areas that receive recycled water from Harvey Place Reservoir. Population density is increasing and awareness of recycled water issues and regulations is sometimes lacking with the new landowners. Presently, most of the change has occurred in the areas supplied by the Upper and Lower Fredericksburg ditches.

The recycled water application areas east of the Carson River are not as greatly impacted by development at this time. This area differs from the west side of the river because fields are much smaller and the irrigation systems are not as complex. This area includes the only recycled water sprinkler application in use in the District's operations area. This type of application practice has limited potential due to topographic constraints, but provides a better system of recycled water tailwater control and improved application efficiency.

2.2.3 Land Use Projections in 2028

Development of rural lands adjacent to or within recycled water application areas are likely to continue on a limited scale in Alpine County along Hwy 88. The ranchettes on Chambers Lane may fill in as homes are built on existing parcels. The population growth in Nevada will likely cause the subdivision of large ranches along the state line, complicating tailwater control and irrigation conveyance issues. Although the growth anticipated in Alpine County does not greatly impact the District's contracted application areas at this time, there is no mechanism currently employed for the protection of irrigated lands and the ensured continuance of application areas. Several of the existing application areas are transitioning from large contiguous ranches owned by one person into several smaller ranches owned by descendants of the original owner. This type of land division through inheritance threatens the continuity of application areas and complicates the management of the lands.

The District-acquired Diamond Valley Ranch land may also experience some land use changes over the next 20 years. Agricultural practices will most likely be maintained but livestock grazing may be reduced. The application of recycled water on the Diamond Valley Ranch may be necessary as the volume of recycled water increases and as application areas elsewhere in Alpine County are lost to development and urban encroachment.

2.3 Population

The population growth in Alpine County and South Lake Tahoe is an important trend to analyze in order to prepare an effective Master Plan. The South Lake Tahoe population will determine the rate of recycled water production change, thereby setting the annual volume of water available for irrigation. The Alpine County population change will require proper planning of recycled water facilities and public education on the benefits of recycled water irrigation as well as the regulatory obligations and requirements relating to recycled water use. Growth in Alpine

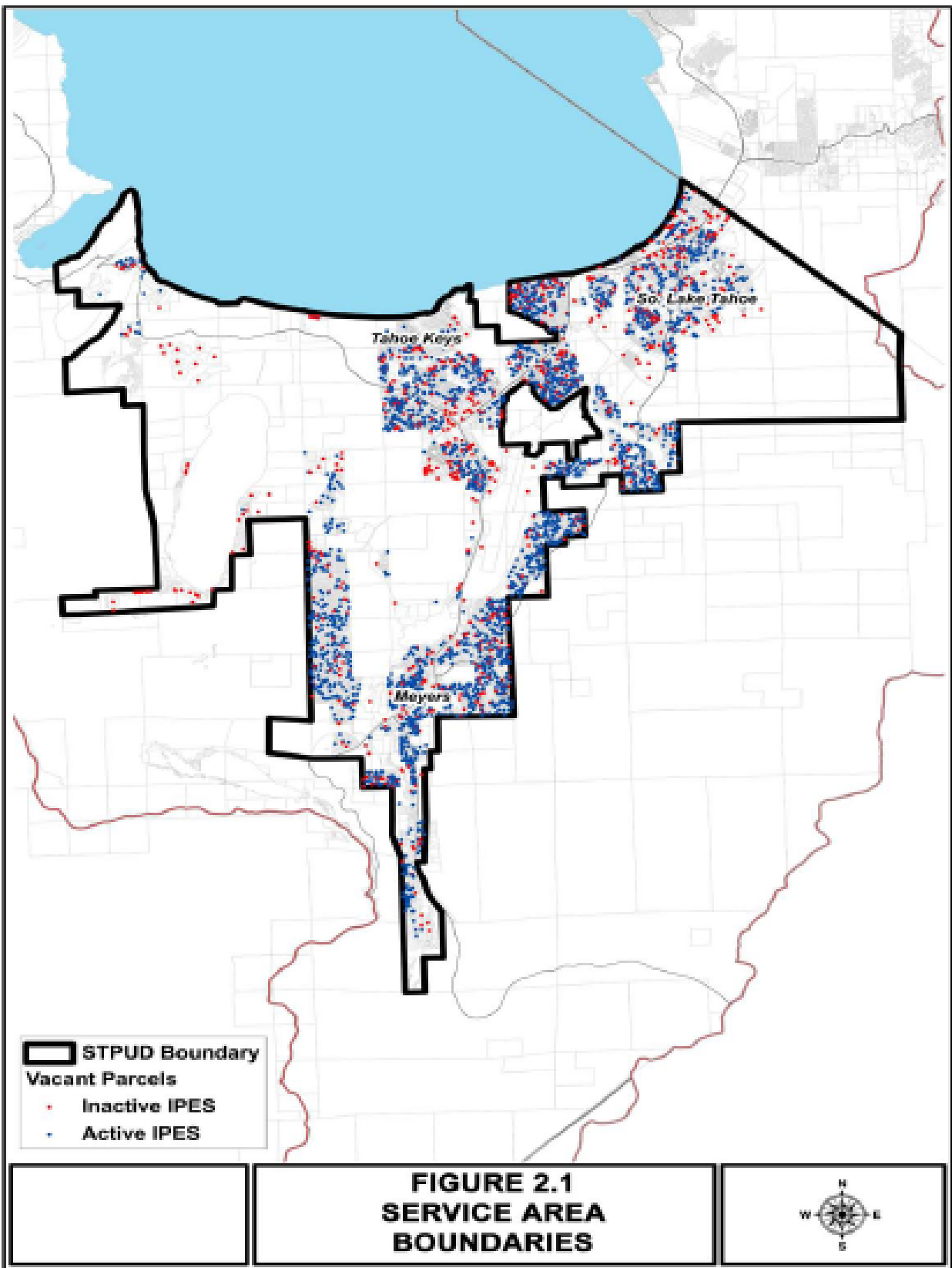
County and the potential for agricultural lands to be developed in response to this growth may impact the lands available for recycled water application.

2.3.1 Alpine County Population Trends

Alpine County has expended great effort in planning for, and maintaining, a rural lifestyle for its residents. The aesthetics, zoning, and value systems of the residents promote low density rural development. Lands available for development are zoned differently from the agricultural and District land holdings. The population of Alpine County is anticipated to increase in the next 20 years; however, the population densities on lands associated with District operations may be less than those in areas zoned as rural residential because of County-planned growth and zoning and the County's dedication to the preservation of open space.

2.3.2 Recycled Water Application Rates and Blending

Several factors influence the rate of applied irrigation water. Soils and crop type have the greatest influence on nutrient assimilation ability and groundwater protection assurance. Although these can be modified by the irrigator to some extent, the range of acceptable application rates is approximately 3.25 acre-feet per acre throughout the agricultural lands in Alpine County. The application rate of 3.25 acre-feet per acre was selected to best approximate the mean application rate in the region. This rate has been demonstrated to not impact groundwater quality at current recycled water strength (see Appendix J). The 3.25 acre-feet per acre recycled water application rate is an assumed value used for planning purposes in this Master Plan. The appropriate, site specific, recycled water application rate could be estimated in Nutrient Management Plans that may be required by the Recycled Water Policy currently being developed by the State of California.



**FIGURE 2.1
SERVICE AREA
BOUNDARIES**