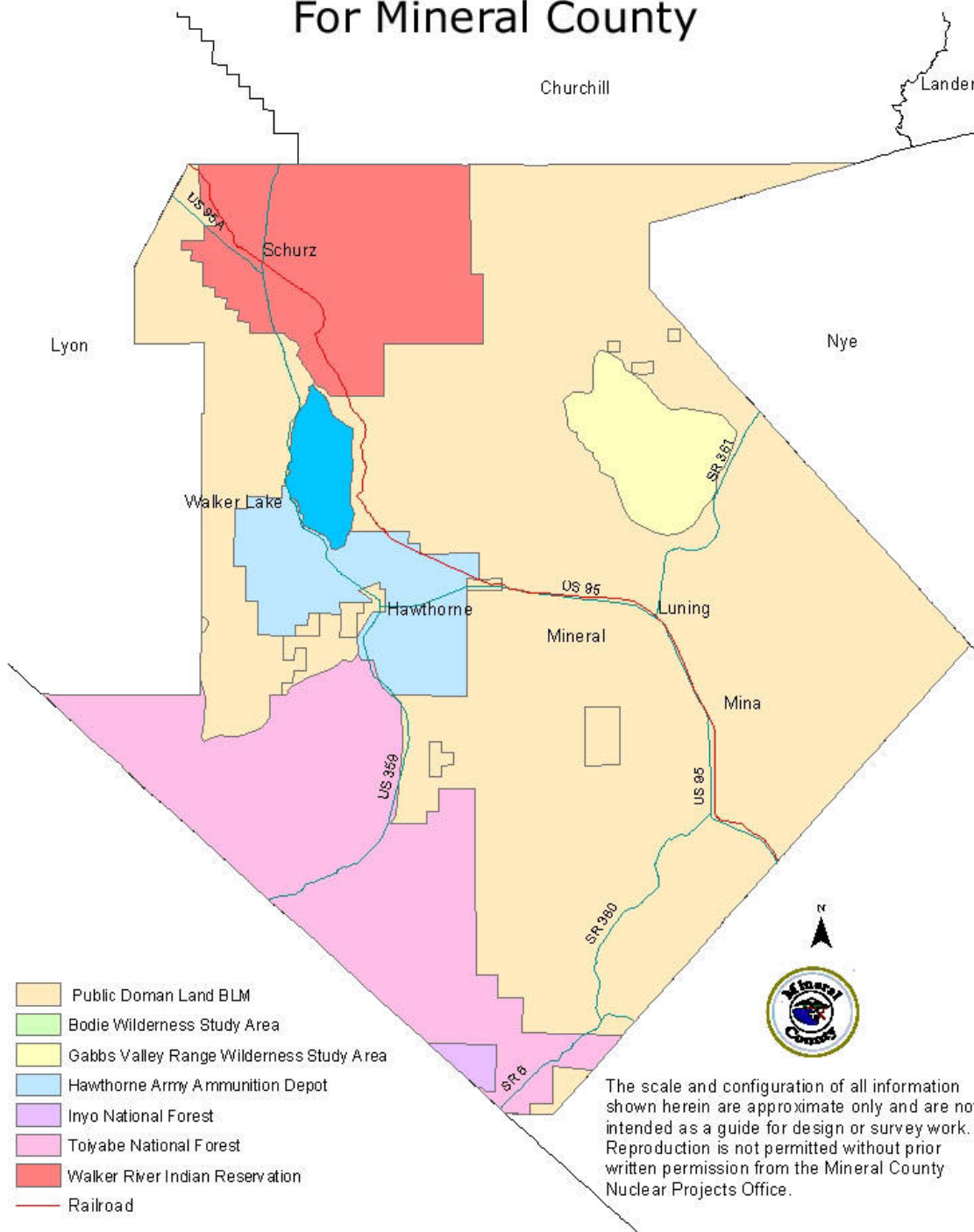




Figure 1-A Major Land Uses For Mineral County



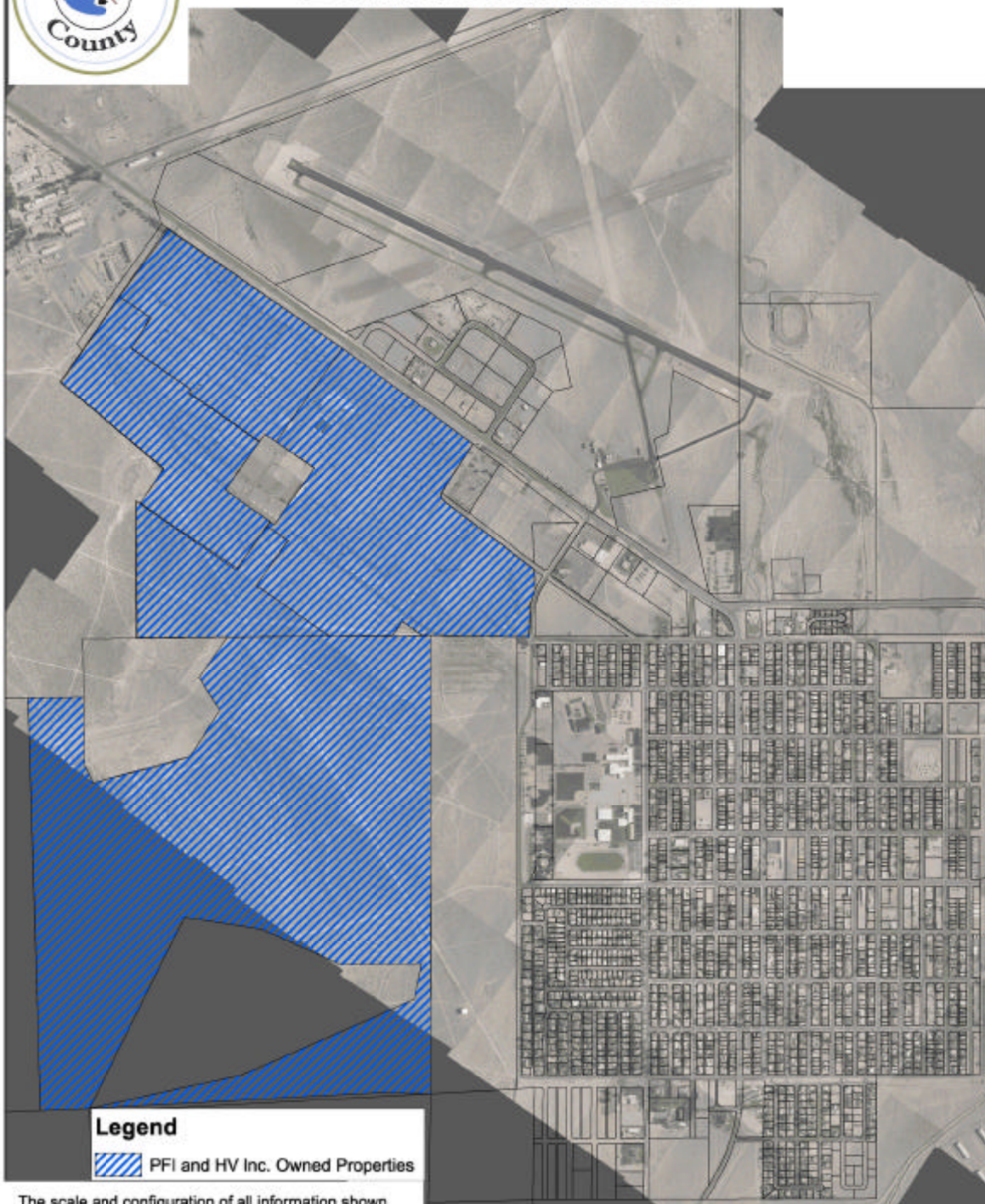
**Figure 2-A
Land Use in Hawthorne**



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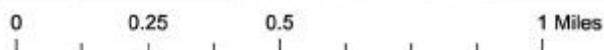
Figure 4-3 Vacant Unimproved Land Babbitt/Hawthorne



Legend

 PFI and HV Inc. Owned Properties

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**Figure 3-A
Land Use in Walker Lake**

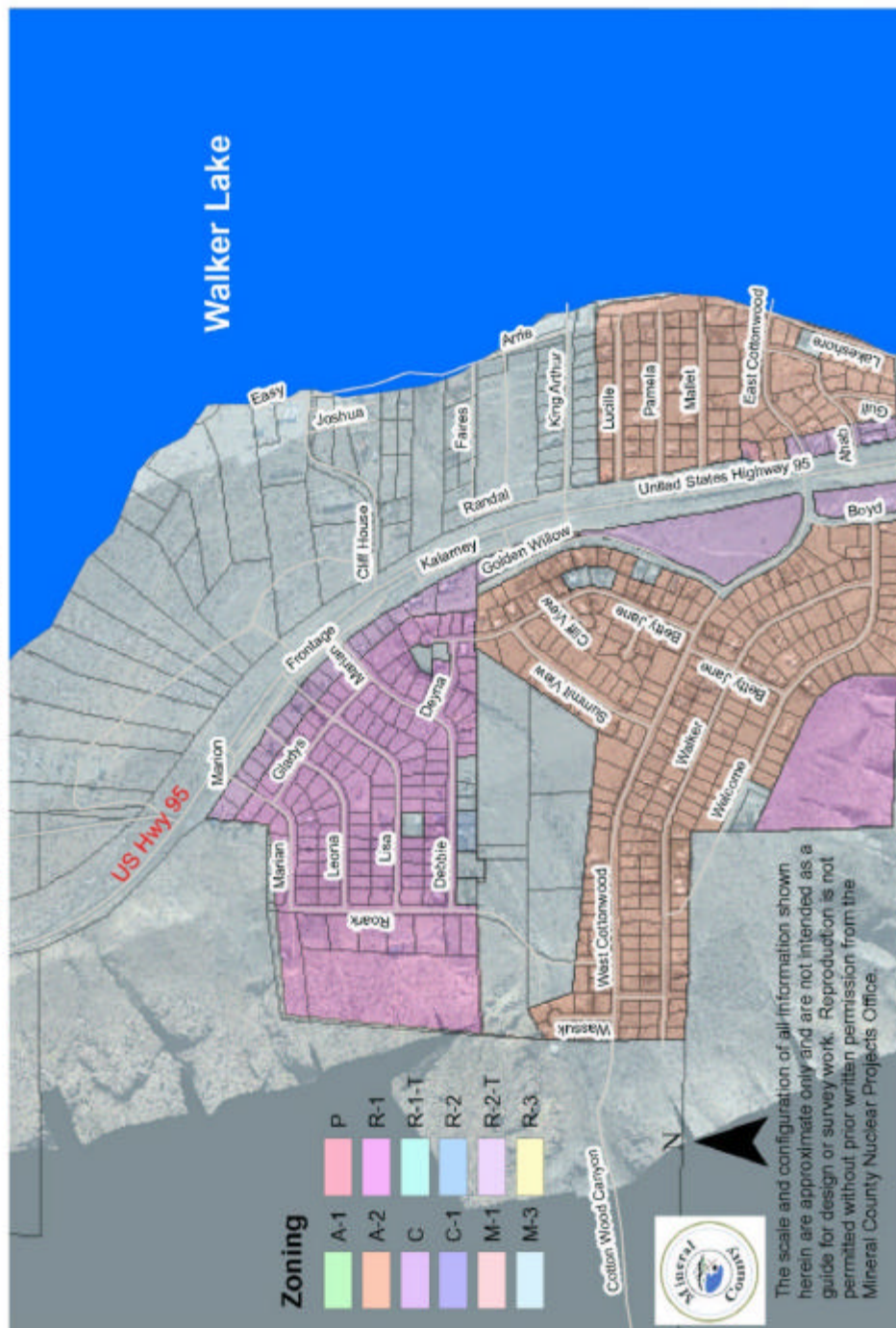
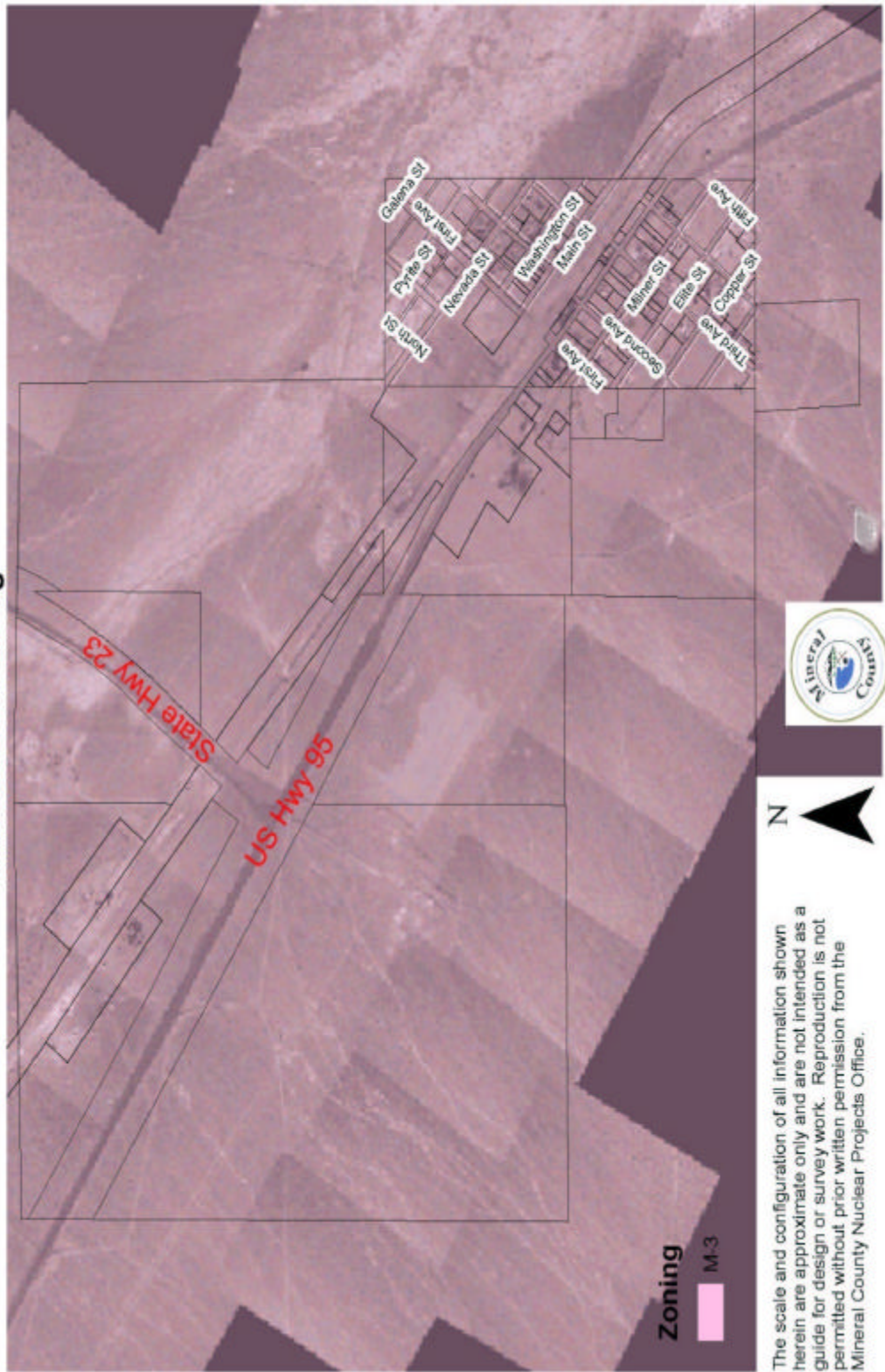





Figure 4-A
Land Use in Mina



**Figure 5-A
Land Use in Luning**





are located adjacent to the highway effectively increasing the population density of the corridor. There are also a number of RV parks along in the corridor. Most of these parks are adjacent to the highway. Their presence, particularly in the summer and fall months effectively increases the permanent population along the corridor. In all there are approximately 149 RV spaces in the corridor. Most are located in Hawthorne. Lands immediately south and east of Hawthorne are under the control of the Department of Defense.

In the Towns of Mina and Luning, which are located adjacent to U.S. 95, there are a variety of land uses. The most predominate land use are small tourist commercial and residential. The location of many residential and commercial establishments within the corridor is much closer than default assumed in the Radtran Analysis used in the Yucca Mountain DEIS. In the Town of Hawthorne, commercial establishments along U.S. 95 are generally within 15 to 30 feet of the highway.

4.2 Water Resources

This section describes the surface and groundwater resources available in Mineral County

4.2.1 Surface Water

Major surface water features are shown in Figure 4-1. With the exception of Walker Lake and Walker River there are few perennial streams in the County. Most of the perennial streams are located in the Wassuk Range west of Walker Lake.

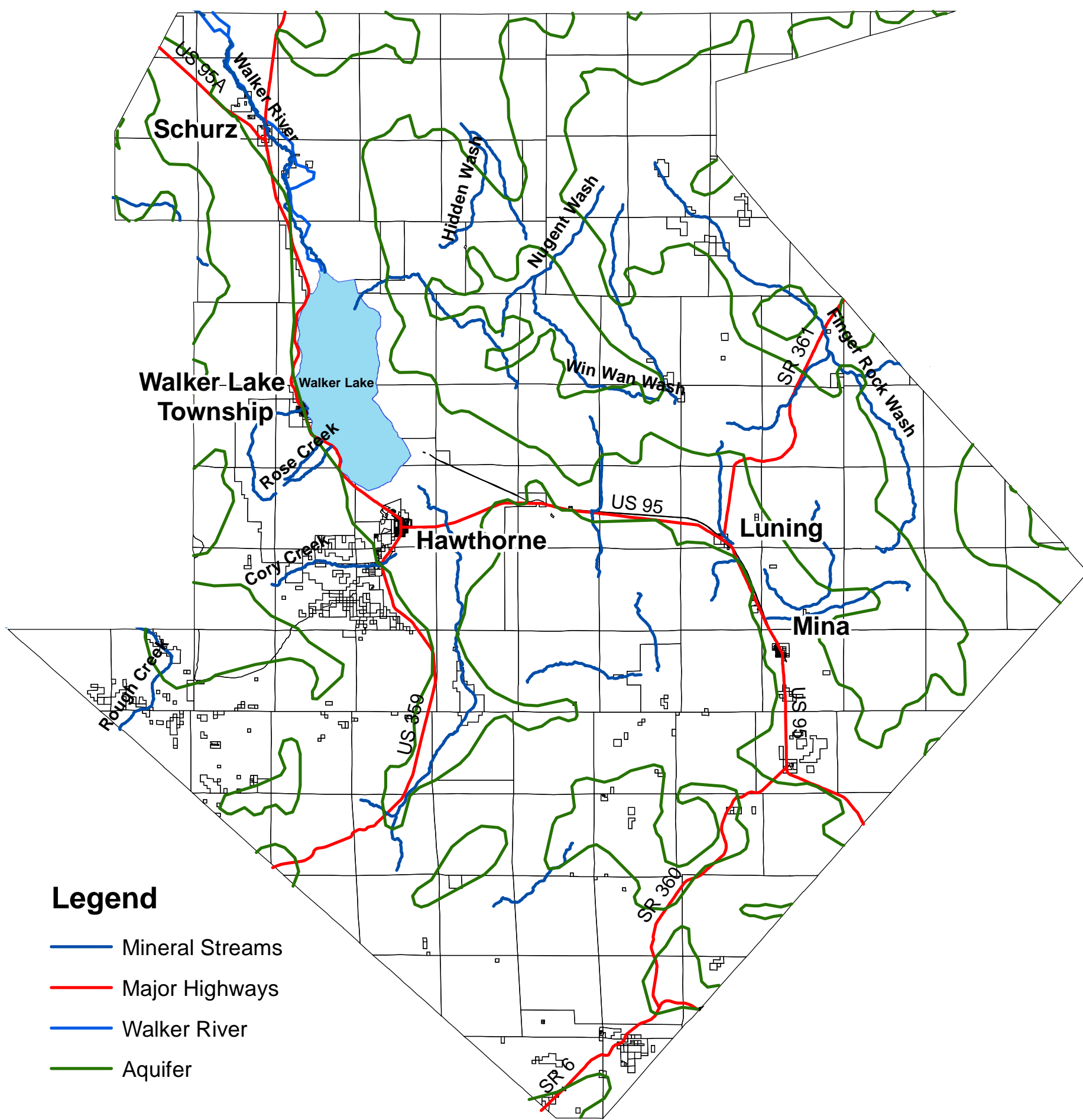
- **The Walker River System--Confluence and Main stem**

Today, in the absence of the effects of an ascending and descending Lake Lahontan, or the natural shifting of the Walker River's channel through the Adrian Valley, the river's course continues through Mason and Campbell valleys and enters Walker Lake. Seven miles downstream from Yerington, the Walker River runs alongside the Mason Valley Wildlife Management Area, an extensive natural habitat area of over 13,000 acres maintained by the Nevada Division of Wildlife. Just beyond this area, at the north end of Mason Valley, the Walker River begins a swooping clockwise turn from north to east to southeast and enters the Walker River Paiute Indian Reservation. Here, the Walker River flows through Campbell Valley and after some 13 miles, enters Weber Reservoir. From Weber Reservoir, the Walker River continues mostly south for another 21 miles across alluvial flats of dried lakebed before entering Walker Lake.

- **Walker Lake**

Walker Lake is the terminal (i.e., without outflow) lake of the Walker River system. It represents one of only two remaining major remnants of ancient Lake Lahontan, an Ice Age lake, which covered much of northwestern Nevada as recently as 12,500 years ago. Walker Lake is approximately 25 miles long, just over five miles wide, about 90

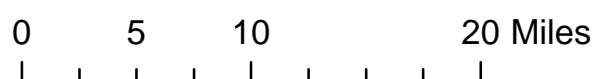
Figure 4-7 Mineral County Groundwater/Acquifer




Legend

- Mineral Streams
- Major Highways
- Walker River
- Aquifer

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feet deep, and contains just over two million acre-feet of water. Walker Lake's waters are of relatively poor quality, characterized by high concentrations of total dissolved solids (TDS), consisting mostly of salts, relatively high temperatures, low dissolved oxygen, and the presence of hydrogen sulfide. The lake also tends to support large blooms of plank tonic blue-green algae, which, when combined with high TDS concentrations and low dissolved oxygen, [http://www.state.nv.us/cnr/ndwp/walker/- N 16](http://www.state.nv.us/cnr/ndwp/walker/-N16) creates a relatively inhospitable environment to fish species, particularly native Lahontan cutthroat trout. Except where the Walker River enters the lake at its northern end, Walker Lake's shores are virtually devoid of major riparian plant growth due, no doubt, to highly variable lake levels. In this respect, Walker Lake's barren shoreline resembles the other classic Great Basin desert terminal lakes (e.g., Pyramid Lake in Nevada, Mono Lake in California, and the Great Salt Lake in Utah).

Walker Lake's future as a viable fishery has been seriously threatened over the last one hundred years or so due to insufficient inflows from the Walker River. From data covering the 1939-1993 period of record, the U.S. Geological Survey (USGS) estimated that an average of 76,000 acre-feet per year flowed into the lake from the Walker River. However, due to the highly variable hydrology of this region, the Walker River has rarely produced "average" inflows to Walker Lake. As an example, during the recent ten-year period of 1987-1996, which encompassed the eight-year drought period of 1987-1996, Walker Lake received inflows from the Walker River in essentially only three years (1987, 1995, and 1996). Nonetheless, under such "average" hydrologic conditions, in addition to Walker River inflows, the USGS estimated that Walker Lake might expect to receive an average of 14,000 acre-feet per year of lake surface precipitation (4.9 inches per year), 11,000 acre-feet per year of local ground water inflows, and 3,000 acre-feet per year of local surface water inflows. More than off-setting these inflows into Walker Lake, however, has been a rate of lake surface evaporation totaling approximately 137,000 acre-feet per year (4.1 feet per year), thereby producing a water budget deficit for Walker Lake of approximately 33,000 acre-feet per year over the 1939-1993 study period. With the exception of the 1997-98 winter, water flows into Walker Lake have been relatively small.

Since I.C. Russell took initial lake recordings in 1882, Walker Lake's surface elevation has declined by 134 feet, from approximately 4,080 feet above mean sea level (MSL) to 3,946 feet MSL presently (March 1996). This has resulted in a decline in the lake's depth from 224 feet recorded in 1882 to only 90 feet at the present time. Today, Walker Lake is only 50 percent of its 1882 surface area and 28 percent of its 1882 volume. The decline in Walker Lake's volume from an estimated nine million acre-feet in 1882 to just over two million acre-feet by 1996 has produced the most pronounced effects on the lake's water quality. Primarily as a result of this dramatic reduction in volume, Walker Lake's concentration of total dissolved solids has risen from 2,560 milligrams per liter (mg/l) reported by Russell in 1882 to nearly 13,000 mg/l presently (1996). Primary contributors to Walker Lake's salt content have been the re-dissolution of salts found in lakebed sediment layers, a groundwater inflow component, and inflows from the Walker River.



For the period of 1903-1994, the USGS estimated that approximately 30 percent of Walker Lake's total salt "load" (i.e., its total quantity of salts) has come from the re-dissolution of salts embedded in lakebed sediment layers. These salts have accumulated over time in the lake's bed due to prior desiccations of Walker Lake, as well as from salt deposition from wind-blown salts falling onto the lakebed during such dry periods. It was also estimated that groundwater inflows within the lake have accounted for approximately 20 percent of the lake's present salt load, while the remaining 50 percent of Walker Lake's total salt loading has come from the Walker River itself.

TDS concentrations within Walker Lake now stand at approximately 13,000 mg/l, a level well above TDS levels of the Walker River as it enters the lake (approximately 100-500 mg/l, depending on rate of inflow). In a 1994 water analysis of Walker Lake conducted by the USGS, which followed essentially eight years of virtually no freshwater inflows, TDS concentrations within Walker Lake were found to be 13,400 mg/l, and consisted primarily of sodium chloride, dissolved carbon, and sulfate. In terms of the ionic concentrations found within Walker Lake, sodium amounted to 4,100 mg/l (31 percent by volume), chloride amounted to 3,200 mg/l (24 percent), sulfate amounted to 3,000 mg/l (22 percent), bicarbonate 2,400 mg/l (18 percent), and carbonate 670 mg/l (5 percent).

- **Weber Reservoir**

Weber Reservoir is located on the Walker River Paiute Indian Reservation and is the only reservoir located on the main stem of the Walker River. The dam was completed in 1935 with a built-in capacity of 13,000 acre-feet; however, in 1972, the U.S. Geological Survey (USGS) estimated that sedimentation had reduced the reservoir's storage capacity to 10,700 acre-feet. Stored waters have no priority date; however, the reservation does have a priority date of 1859 for a flow rate of 26.25 cfs at the Wabuska gage (located at the north end of Mason Valley at the entrance to the reservation) which may be used to fill this reservoir, with such waters subsequently being used for the irrigation of lands on the reservation.

4.2.2 Ground Water

Mineral County stretches across parts of two of Nevada's fourteen major hydrographic regions or water basins (watersheds) with approximately the eastern half of the county located within the Central Region (Hydrographic Region 10) and the remaining western half of the county located within the Walker River Basin (Hydrographic Region 9). In addition to the two major hydrographic regions encompassing Mineral County, the county also contains, either wholly or partially, twenty-three hydrographic areas and hydrographic sub-areas. These hydrographic units typically consist of a single valley or discrete drainage area within a larger hydrographic region.

Table 4-1 shows the current groundwater basin status, permitted water rights and pending applications. Most basins in Mineral County are currently designated. The availability of groundwater is critical to future growth and development of the County. It is unlikely the

County could rely upon surface water resources for a future source of municipal and industrial supply. It is also important to note, that unlike other areas in Nevada there is very little irrigation water use in and around populated areas of Mineral County. The option to convert irrigation water to another use is not available.

Basin	Active Pending Acre Feet	Perennial Yield	Designated
110b	2,092.96	700	No
110c	15,692.80	5,000	Preferred Mun., Irr. Denied
110a	637.40	1,500	No
111B	0	700	No
112	0	300	No
113	2,596.49	150	No
114	132.41	1,400	No
115	0	150	No
119	42.10	1,000	No
120	0	150	No
121a	3,168.72	600	All
121b	300.29	200	All
136	138.65	400	No
135	133.36	2,500	No
122	21,186.16	5,000	All
124	39.71	250	All
123	115.67	500	No
108	159,430.38	25,000	All
107	60,672.09	17,000	Portion, Con, Ind, Stk
109	20,390.39	5,500	No
116	121.00	600	No
118	1,202.37	4,000	No

Source: Nevada Division of Water Resources, 2002.

4.2.3 Water Use

In 1995 Mineral County's total water withdrawals were estimated at 19,714 acre-feet, or only 0.5 percent of estimated total water withdrawals within the State of Nevada (See Table 4.2). Total water withdrawals in 1995 were down 44.3 percent from total withdrawals in 1990 and also down 53.4 percent from total water withdrawals estimated in 1985. These declines were due entirely too reduced levels of irrigation

water use from prior periods. Of the total 1995 water withdrawals, public supplied water withdrawals (i.e., municipal and industrial water withdrawals) were estimated at 1,255 acre-feet, or 6.4 percent of total water withdrawals. As shown in Table 4-2, it may be seen that water withdrawals in Mineral County in 1995 were dominated by irrigation withdrawals (79.6 percent of total water withdrawals), while mining water withdrawals accounted for 12.8 percent of total withdrawals and domestic uses accounted for 5.8 percent of total water withdrawals in Mineral County.

More recent water data indicates that Mineral County has a per capita use rate of 446 gallons per day. This relatively high per capita use can be attributed to the number motel/hotel units relative to the local population.

Table 4-2 Mineral County Water Usage				
(Estimated Annual Water Use by Type (Acre-Feet per year))				
Water Use by Major Category	1985	1990	1995	Percent of 1995 Total Water Use
Total Water Withdrawals/Use	42,348	35,402	19,714	100.00%
Domestic Water Withdrawals	1,117	913	1,153	5.85%
Commercial Water Withdrawals	291	1,199	280	1.42%
Industrial Water Withdrawals	0	0	0	0%
Thermoelectric Water Withdrawals	0	0	0	0%
Mining Water Withdrawals	605	1,646	2,520	12.78%
Livestock Water Withdrawals	90	34	34	0.17%
Irrigation Water Withdrawals	40,123	31,364	15,682	79.55%
Public Use & Losses	123	246	45	0.023%
<i>Notes: "Water Use" and "Water Withdrawals" are equivalent terms, but are not the same as consumptive use and do not account for return flows. Total Water Withdrawals and Domestic, Commercial, Industrial, and Thermoelectric Water Withdrawals include both public supplied and self-supplied water. Mining Water Use includes both mine consumptive use (i.e., processing) and mine dewatering. One acre-foot is equivalent to 325,851 gallons.</i>				

Source Data: U.S. Geological Survey (USGS); U.S. Department of Agriculture (USDA), Nevada Agricultural Statistics Service; Nevada State Demographer; Nevada Division of Water Planning (NDWP).

Based on 1995 water use data, along with comparable period population and employment figures, it was estimated that Mineral County's public supplied water use per person (also referred to as municipal and industrial, or M&I, water use), based only on the estimated population served by public supply water systems, was 212 gallons per person per day, compared to 224 gallons per person per day in 1985, and 342 gallons per person per day in 1990. Table 4.3 presents a number of estimated water usage rates for Mineral County for the years 1985, 1990, and 1995 based on water use per person, per worker, or per occupied housing unit, i.e., per household.



Table 4-3 Mineral County Water Usage Rates			
(Gallons per Person, per Worker or per Household per Day)			
Water Usage Rates by Type/Sector 1985 1990 1995)	1985	1990	1995
Municipal & Industrial Water Use per Person	224	342	212
Domestic Public Supplied Water Use per Person	163	127	157
Total Domestic (Residential) Water Use per Person	161	127	157
Total Commercial & Industrial Water Use per Worker	127	543	116
Total Domestic Water Use per Household	413	322	393

Notes: "Water Use" and "Water Withdrawals" are equivalent terms, but are not the same as consumptive use and do not account for return flows. "Municipal & Industrial Water Use per Person" includes public supplied domestic, commercial, industrial and thermoelectric water withdrawals divided by the resident population served by such public supply water systems; "Domestic Public Supplied Use per Person" includes only public supplied residential water use divided by the resident population served by the public supply water system; "Total Domestic (Residential) Water Use per Person" includes both public supplied and private supplied residential water use divided by the total county resident population; "Total Commercial and Industrial Water Use per Worker" equals both public supplied and self-supplied water withdrawals divided by the county's total covered employment, excluding mining water use and mining employment; "Total Domestic Water Use per Household" includes both public supplied and self-supplied water divided by the number of occupied housing units. Households are equivalent to occupied housing units and are not the same as total housing units. One acre-foot is equivalent to 325,851 gallons.

Source Data: U.S. Geological Survey (USGS); Nevada State Demographer; U.S. Bureau of the Census; Nevada Department of Employment, Training and Rehabilitation (DETR); Nevada Division of Water Planning (NDWP).

From a 1995 survey, it is estimated that 2,900 acres were irrigated in Mineral County in that year (7,440 irrigated acres in 1985 and 5,800 irrigated acres in 1990). This amount of irrigated acreage comprised approximately 0.4 percent of the state's total 1995 irrigated acreage of 715,439 acres (843,760 acres in 1985 and 728,650 acres in 1990). The 1995 level of irrigated acreage placed Mineral County as the third lowest in terms of county irrigated acreage in Nevada at that time only ahead of Carson City and Storey County.

Based on 1995 estimates of both total irrigated acreage and total irrigation water withdrawals, the average water use (withdrawals) on irrigated acres in Mineral County was estimated at approximately 5.4 acre-feet per acre per year. Mineral County's 1995 irrigation conveyance losses were estimated at 1.6 acre-feet per acre per year, thereby leaving irrigation water available for consumptive use of approximately 3.8 acre-feet per acre per year (See Table 4-4).

Figure 4-2 shows the projected municipal and industrial water use in Mineral County based upon population projections in Table 2-1. Overall, municipal and industrial water use will rise slowly and generally will not exceed the availability of current resources.



Table 4-4 Mineral County Agricultural Water Use Analysis

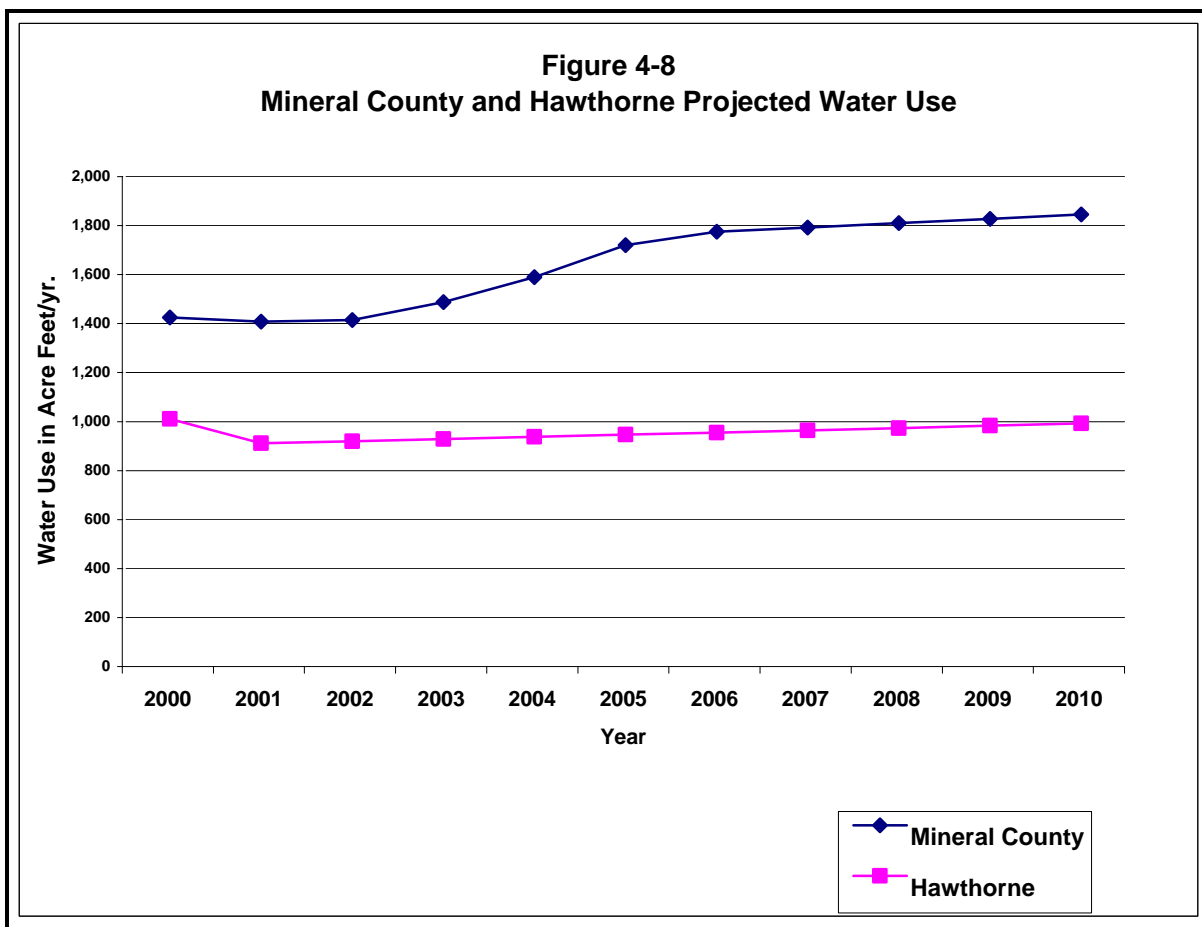
(Acres, Acre-Feet, Acre-Feet per Acre per Year) Agricultural-Related Measure 1985 1990 1995)

Total County Irrigated Acreage (Acres)	7,440	5,800	2,900
Total Irrigation Water Withdrawals (Acre-Feet)	40,123	31,364	15,682
Average Irrigation Water Use (Acre-Feet/Acre/Year)	5.4	5.4	5.4
Irrigation Conveyance Losses (Acre-Feet/Acre/Year)	1.6	1.6	1.6
Water for Crop Consumptive Use (Acre-Feet/Acre/Year)	3.8	3.8	3.8
Total Farm Marketing's (Millions of Dollars)	\$0.955	\$2,228	\$2,476

Notes: Irrigated acreage is not the same as water-righted acreage and includes only that acreage estimated to have actually received irrigation water during the irrigation period. One acre-foot is equivalent to 325,851 gallons.

Source Data: U.S. Geological Survey (USGS); U.S. Department of Agriculture (USDA), Nevada Agricultural Statistics Service; U.S. Department of Commerce, Bureau of Economic Analysis (BEA), Regional Economic Information System (REIS); Nevada Division of Water Planning (NDWP).

**Figure 4-8
Mineral County and Hawthorne Projected Water Use**



Appendix A: Mineral County Combined Statement of Revenues and Expenditures

Revenues	2006	2005	2004	2002	2001
Taxes	\$2,165,175	\$ 2,248,021	\$1,924,252	\$1,650,706	\$1,797,770
Licenses and Permits	\$185,789	\$ 166,301	\$ 200,783	\$151,299	\$150,842
Intergovernmental	\$4,509,536	\$ 5,854,362	\$5,640,233	\$4,122,038	\$4,207,053
Charges of Services	\$1,354,150	\$ 1,228,440	\$1,134,302	\$887,879	\$926,665
Fines and Forfeits	\$253,837	\$ 205,075	\$ 293,197	\$237,604	\$284,100
Miscellaneous	\$566,715	\$ 652,116	\$ 272,830	\$978,966	\$456,725
Total Revenues	\$9,035,202	\$10,354,315	\$9,465,597	\$8,028,492	\$7,823,162
Expenditures:					
General Government	\$2,111,156	\$ 2,008,709	\$1,801,417	\$2,438,725	\$1,552,777
Public Safety	\$3,299,559	\$ 3,187,893	\$3,375,867	\$2,863,255	\$2,943,338
Judicial	\$777,988	\$ 736,021	\$ 657,879	\$636,527	\$711,951
Highways and streets	\$939,403	\$ 967,483	\$ 980,094	\$1,015,844	\$1,040,537
Health and sanitation	\$187,007	\$ 469,335	\$ 226,373	\$348,316	\$391,296
Welfare	\$416,280	\$ 146,469	\$ 428,738	\$285,522	\$280,574
Culture and Recreation	\$427,523	\$ 368,393	\$ 317,818	\$345,542	\$321,598
Community Support	\$697,089	\$ 2,382,984	\$1,392,971	\$362,840	\$592,412
Debt Service	\$59,124	\$ 59,123	\$ 97,611	\$46,675	\$54,433
Intergovernmental	\$145,100	\$ 75,000	\$ 17,151	\$74,490	\$58,500
Capital Outlay				\$54,640	\$52,696
Total Expenditures	\$9,059,229	\$10,450,665	\$9,295,919	\$8,472,376	\$8,100,212
Excess (Deficiency)	-\$24,027	-\$96,350	\$169,678	-\$443,884	-\$227,050
Total other financing sources (uses)	\$86,000	\$75,000	\$50,000	\$100,000	\$150,000
Total Excess (Deficiency)	\$61,973	-\$21,350	\$274,678	-\$343,884	-\$127,050
Fund Balance-Begin, July 1	\$2,856,162	\$2,877,512	\$2,255,457	\$2,599,342	\$2,726,391
Fund Balance-End, June 30	\$2,918,135	\$2,856,162	\$2,877,512	\$2,255,457	\$2,227,177

Source: Mineral County Audits.