LAS VEGAS VALLEY WATER DISTRICT
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Las Vegas, NV 89153
702-870-2011 • lvvwd.com

September 4, 2024

Department of Conservation and Natural Resources
Division of Water Resources
901 S. Stewart Street, Suite 2002
Carson City, NV 89701

SUBJECT: LAS VEGAS VALLEY WATER DISTRICT SMALL SYSTEMS CONSERVATION PLAN, 5-YEAR PLAN UPDATE

To whom it may concern,

On behalf of the Las Vegas Valley Water District (LVVWD), I am pleased to submit the draft LVVWD Small Systems Water Conservation Plan. This plan outlines current and planned conservation efforts within LVVWD's small system service areas, including Kyle Canyon, Blue Diamond, Searchlight and Jean. The updated plan covers a five-year period from November 5, 2024, to November 5, 2029. We are confident the plan complies with all applicable requirements of Nevada Revised Statutes.

Specifically, the plan includes:

- A description of water management measures, including water loss calculations, goals for acceptable levels of water loss and measures to support goal achievement (Chapter 3).
- Specific water conservation measures (Chapter 4)
- A description of public education and outreach initiatives to increase awareness of resource limitations and to encourage water efficient landscapes (Chapter4)
- A drought contingency plan (Chapter 5)
- Plan implementation efforts and a schedule for carrying out the plan (Chapter 6).
- Estimated water savings and measures to evaluate plan effectiveness (Chapter 6).

The LVVWD has made the plan available for public review and comment and will consider additional public input as required under Open Meeting Law during the plan approval process. The plan is scheduled for consideration by the LVVWD and Kyle Canyon Water District Board of Directors on November 5, 2024. To meet deadlines for agency approvals, we request State review completion by October 1, 2024.

If you have any questions or need additional information, please reach me at 702-862-3713 or by email at zane.marshall@snwa.com.

Sincerely,

Zane L. Marshall
Director of Water Resources

Attachment a/s

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LAS VEGAS VALLEY WATER DISTRICT

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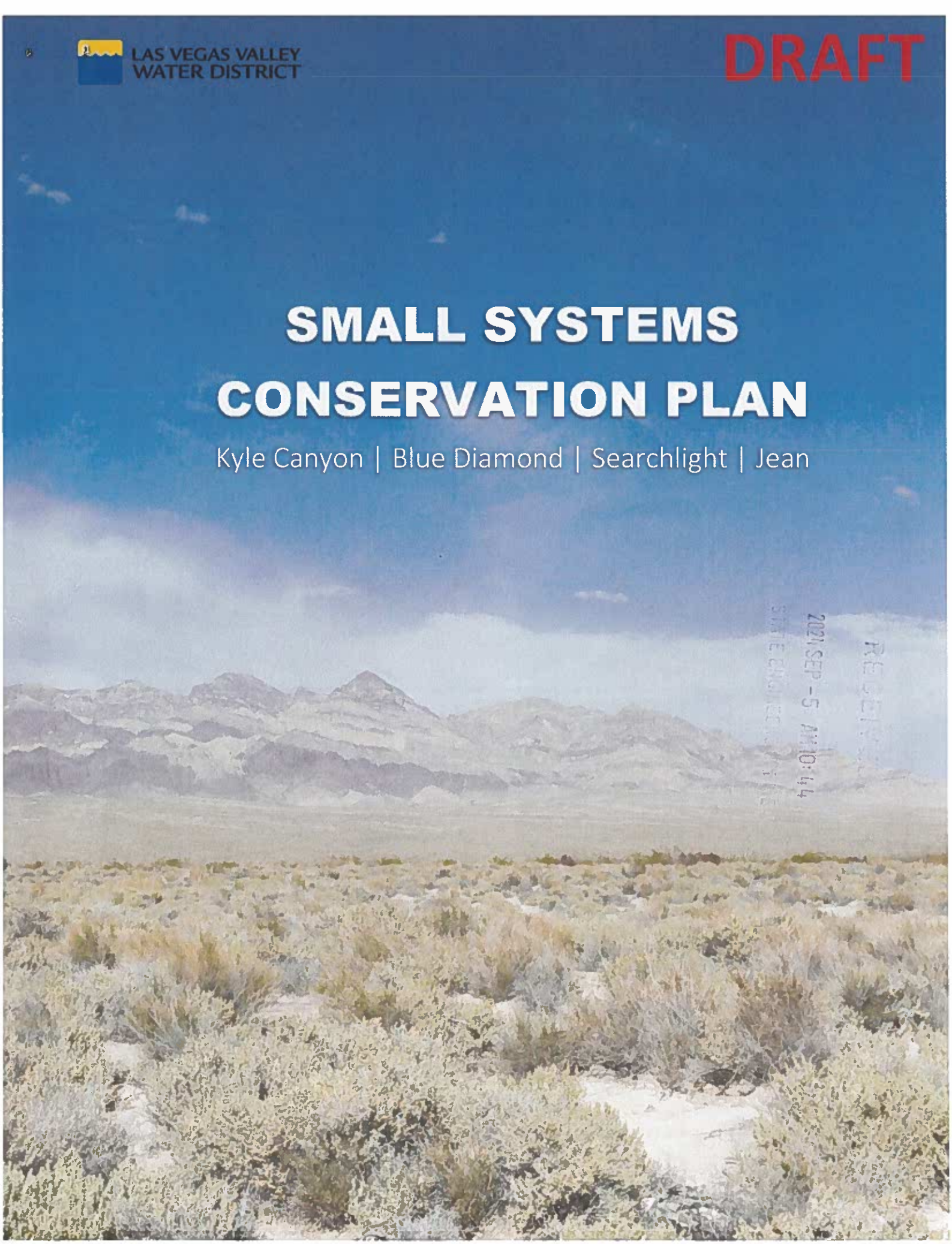
SMALL SYSTEMS CONSERVATION PLAN

Kyle Canyon | Blue Diamond | Searchlight | Jean



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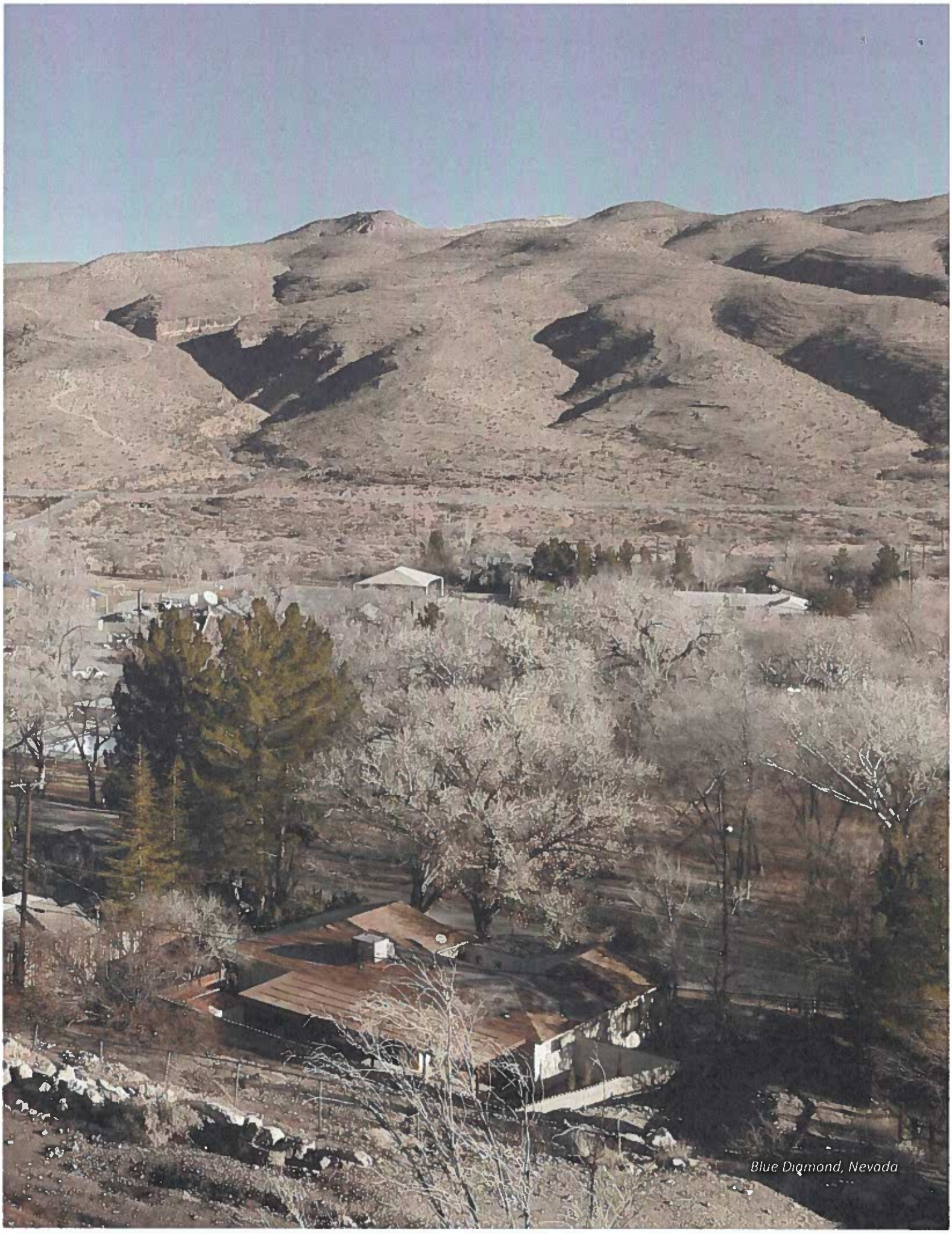

Blue Diamond, Nevada

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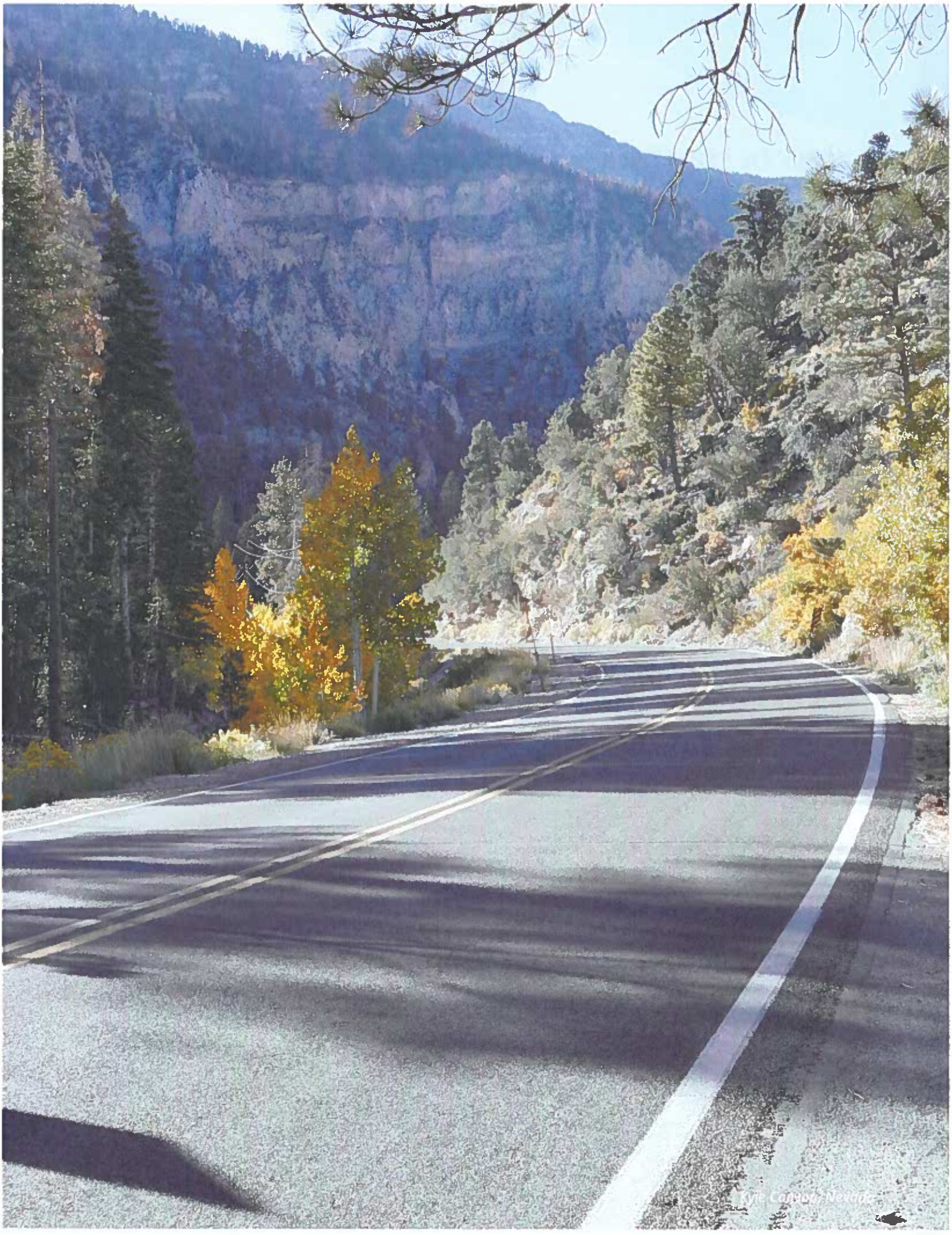
Kyle Carver Nevada

CHAPTER 1: PLAN INTRODUCTION

The Las Vegas Valley Water District (LVVWD) is a not-for-profit public agency that began providing water service to the Las Vegas Valley in 1954. In addition to serving residents of Las Vegas and unincorporated Clark County, the LVVWD operates four small public water systems that serve customers in Kyle Canyon, Blue Diamond, Jean and Searchlight, Nevada (Figure 1.1).

As the municipal water provider, the LVVWD is responsible for providing reliable, high-quality drinking water supplies to its customers. This includes managing available water supplies, conducting water quality treatment and testing, constructing necessary facilities, and operating and maintaining water treatment, storage and distribution facilities. The LVVWD is also responsible for developing and implementing water conservation plans for the communities it serves.

The water systems described in this plan support small communities—most serve fewer than 500 residents and all serve fewer than 500 service connections. Each have faced many challenges over the years—from declining groundwater levels associated with changing precipitation and recharge rates to system aging and funding challenges for infrastructure improvements. The LVVWD collaborates with its small system customers to identify needs, address system improvements, implement new technologies and improve water management through conservation efforts.

Figure 1.1 Small Systems Service Area Map

Historically, each community's ability to pursue water system improvements has been constrained by funding limitations. Implementing infrastructure improvements is particularly challenging in the small system areas, given the small number of customers with which to share the cost burden. As a result, non-essential improvements that could enhance operational efficiency are often deferred until funding becomes available or needs reach a level of critical urgency. The LVVWD has pursued grants and loans to support the infrastructure needs of these communities and will continue to seek out resources over the planning horizon to improve small water system efficiency and operational reliability.

CONSERVATION PLAN REQUIREMENTS

Nevada Revised Statutes (NRS) 540.121 through 540.151 requires all water suppliers in Nevada to prepare and adopt a water conservation plan based on the climate and living conditions of its service area and to update the plan every five years. These statutes allow suppliers of water within a common geographic area to submit a joint plan. This Small Systems Water Conservation Plan (Plan) has been developed to meet these requirements and prombte the efficient use of water within the LVVWD's small systems service areas. The LVVWD solicited public comment on the draft Plan and made the plan available for public inspection, both online and at the LVVWD's business office.

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Searchlight, Nevada (Piute Valley)

CHAPTER 2: SMALL SYSTEMS OVERVIEW

This chapter provides a brief overview of each small system managed by the LVVWD, including water sources, uses and associated facilities.

POPULATION AND WATER USE ESTIMATES

Gallons Per Capita Per Day (GPCD) is used by many communities to measure water use and is an effective tool for assessing efficiency over time. However, this metric should not be used to compare water use across different water systems, even those in close proximity, as variations in population size, climate, demographics, and water usage patterns can lead to inaccurate conclusions about water efficiency.

Figure 2.1 details the per capita water use for each of the LVVWD's small water systems, which is calculated by dividing each system's total water use (residential and non-residential deliveries and non-revenue water) by the estimated population divided by 365. The population figures used in these calculations were obtained from a 2023 Clark County, Nevada Population Estimate from the Clark County Department of Comprehensive Planning (Appendix 2) and adjusted to include only those residents served by the small systems.

Release of the 2020 U.S. Census results in 2021 led to a significant population adjustment for some communities, impacting per capita water use. As further detailed in this plan, the observed increase or decrease in per capita water use between 2020 and 2021 is not necessarily due to customers using more or less water, but more likely a reflection of the updated population count from the prior census. Water use changes may also be attributable to work and residency changes related to the COVID-19 pandemic, which occurred during the same timeframe. During this time, many Nevadans shifted to remote work, relocated, or experienced changes in household water consumption patterns.

Figure 2.1: Small System Overview

System	LVVWD Role	Population (2023)	Accounts (2023)	Water Source	Deliveries (2023)	GPCD (2023)
Kyle Canyon	Operator	540[1]	419	Groundwater	61.9 AF	102
Searchlight	Owner/Operator	415	287	Groundwater	124.9 AF	269
Blue Diamond	Owner/Operator	414	133	Groundwater	100.0 AF	216
Jean[2]	Owner/Operator	N/A	28	Groundwater	69.0 AF	N/A

[1] Population data includes residents outside of the Kyle Canyon service area. Kyle Canyon population figures were revised to 72.0 percent of the Mt. Charleston total population. The percentage used was determined by comparing the Clark County Population estimate for Mt. Charleston to the 2021 and 2023 GILIS total population estimates for the Kyle Canyon service area.

[2] Jean, Nevada has no permanent residents. As a result, it is not possible to calculate or estimate a reasonable GPCD for this water system.

BLUE DIAMOND WATER SYSTEM

The LVVWD assumed operation and maintenance of the Blue Diamond Water System in 1992. As of 2023, the system supports 133 total active accounts, the majority of which are residential (Figure 2.2). The LVVWD manages the system in accordance with a 1994 Water Supply Agreement (1994 Agreement) between the LVVWD and CertainTeed Gypsum Manufacturing, Inc. (formerly, the James Hardie Gypsum Mine).

Blue Diamond Setting and Climate

Blue Diamond is 15 miles southwest of Las Vegas and about three miles northwest of State Routes 159 and 160 (Figure 2.3). The town is in the extreme southwestern portion of the Las Vegas Valley hydrographic basin and within the Red Rock Canyon National Conservation Area. The community is surrounded by federal lands that are not currently identified for disposal.

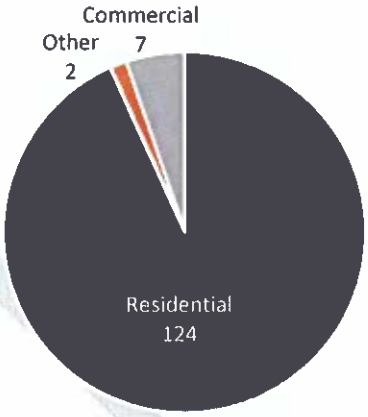
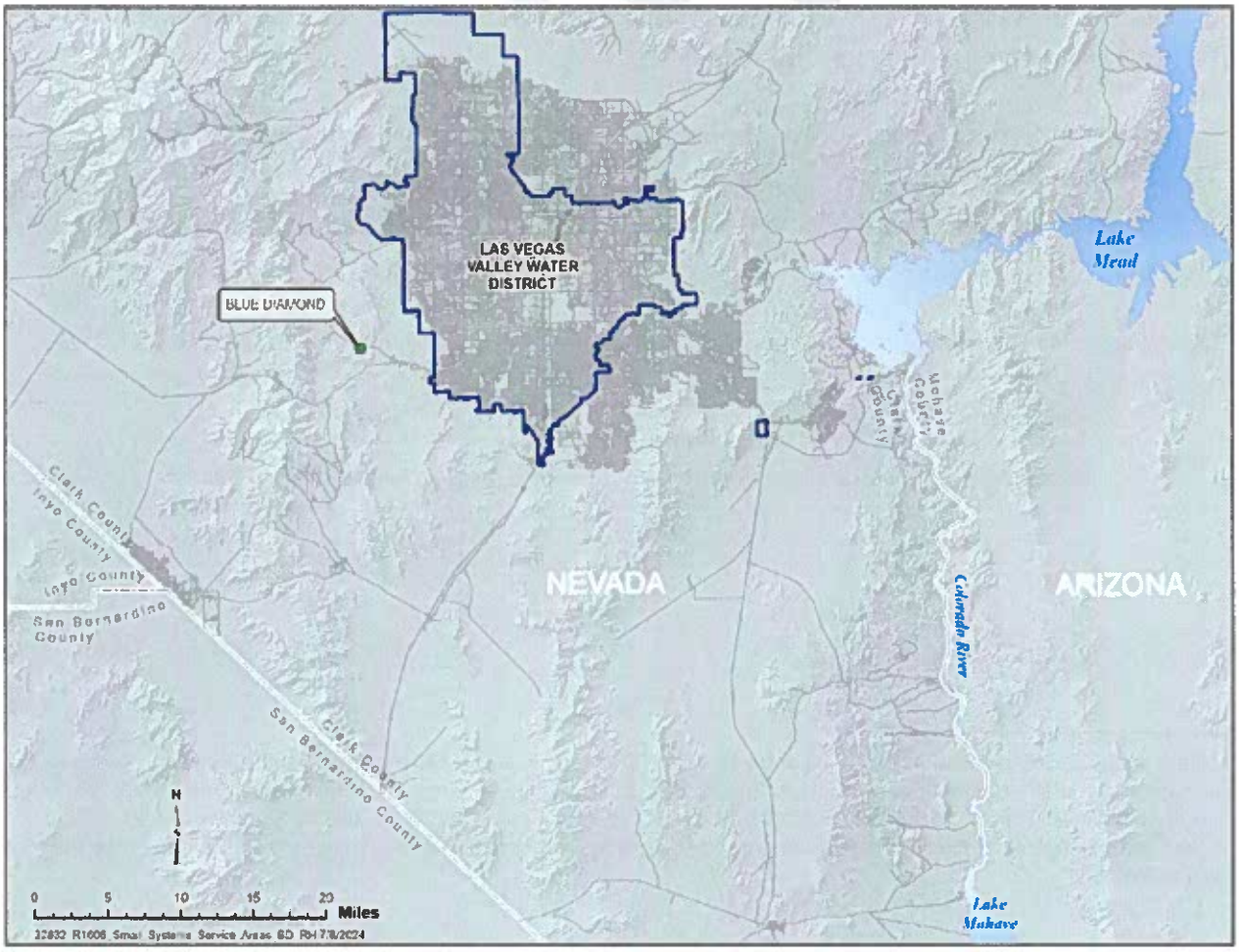


Figure 2.2: Account Summary

Blue Diamond experiences a desert climate characterized by hot summers, mild winters and low annual precipitation. The average temperature ranges between 31°F to 98°F, with summer temperatures often exceeding 100°F. Typical of the Mojave Desert in which it's located, Blue Diamond experiences arid conditions, averaging approximately five inches of precipitation annually.

Figure. 2.3: Blue Diamond Location Map



Blue Diamond Water Sources and Facilities

The Blue Diamond Water System depends on local groundwater to meet community water demands. As the original water service provider for Blue Diamond, CertainTeed has rights to 549 acre-feet of groundwater annually (AFY). The LVVWD has rights to an additional 150 AFY, which were transferred to the LVVWD under the 1994 Agreement.

As shown in Figure 2.4, Blue Diamond is served by two groundwater wells and two storage reservoirs that have a total combined capacity of 250,000 gallons. Drilled in the 1950s, the groundwater production wells provide water to the CertainTeed manufacturing plant and the Blue Diamond public water system. The wells and booster pump that provide water to the storage tanks are owned and operated by CertainTeed, which also owns system chlorination facilities. However, these facilities are operated and maintained by the LVVWD to ensure compliance with Safe Drinking Water Act standards.

Image: Blue Diamond Reservoirs

Figure 2.4: Blue Diamond Major Facilities

Asset Type	Year Constructed	Pumping/Storage Capacity	Well Depth / Reservoir Elevation
BD 1 Well	~1950	700 gallons per minute	65 ft.
BD 2 Well	~1950	400 gallons per minute	65 ft.
BD Tank 1	1998	125,000 gallons	3,509 ft.
BD Tank 2	1998	125,000 gallons	3,509 ft.

Blue Diamond's groundwater wells recharge naturally from precipitation and snowmelt runoff in the Wilson Cliff/Red Rock Canyon and Mount Potosi areas. Annual precipitation trends are highly variable and correlate directly to the static water levels in the groundwater wells. The LVVWD rehabilitated the wells and lowered the pump intakes in 2017 in response to consecutive years of below-average hydrology that caused steady water-level declines in the wells. These actions reduced immediate risks, but the system remains susceptible to failure due to well age and water-level declines in the local aquifer.

Pumping water levels are approximately 30 feet above pump intakes in both wells, making operation of the wells vulnerable to water-level declines resulting from increased production or drought conditions such as those experienced between 2012 and 2018. The LVVWD is pursuing a well replacement, which would improve system reliability. However, this addition will not resolve vulnerabilities associated with limited aquifer storage and the potential of diminished groundwater resources due to future droughts.

Conservation and water management measures remain a top priority for this small desert community. However, pumping and consumption by the community have a relatively small effect on local aquifer conditions. In the event of significant water level declines, municipal conservation efforts alone would not be enough to improve aquifer conditions. Drought contingency plans for the community are discussed in Chapter 5.

Blue Diamond Customer Water Use

Figure 2.5 provides a comparison of population and per capita water use from 2014 to 2023. Recent changes in per capita water use correlate with the population adjustments made by the Clark County Comprehensive Planning Department, reflecting the 2020 U.S. Census results, which revised the population from 568 in 2020 to 385 in 2021, a 32 percent decrease. The reduced population placed upward pressure on per capita water use. The observed increase is not necessarily due to residents using more water, but more likely a reflection of the lower population count, and other outside factors as detailed in Chapter 1.

While per capita water use appears to be up since 2020, actual water use is down by more than 12 percent or 4.53 million gallons since 2018 and 22 percent or 9.31 million gallons since 2014 (Figure 2.5). Water delivery reductions are related to conservation and water management measures, including the issuance of a temporary moratorium on new water commitments, system improvements and the implementation of a rate increase in 2022, as further detailed below.

Figure 2.5: Blue Diamond Population and Per Capita Water Use

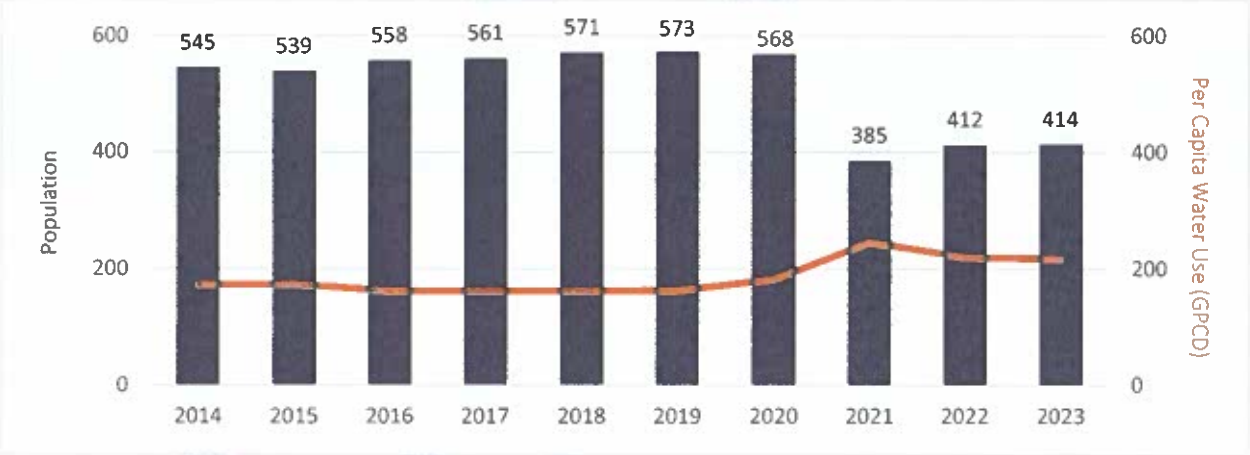


Figure 2.6: Blue Diamond Water Deliveries

2024-2029 Blue Diamond Water System Updates

Moratorium: The LVVWD Board of Directors approved a resolution in 2020, imposing a temporary moratorium on the issuance of additional water commitments, meter-size increases and service for expanded use within the Blue Diamond Water System. The action was in response to several years of poor hydrology, concerns about exacerbating impacts on the system's aging infrastructure and potential impacts associated with worsening climate change conditions, which could further impair the system's ability to meet demands. Although the community is consistently underutilizing its permitted water rights, the LVVWD recognizes that the available duty may be inadequate to meet new service while maintaining a contingency buffer.

The moratorium will remain in effect until the Board determines that the water system is no longer threatened by additional water commitments or until an alternative, adequate water supply is available to resume normal operations.

System Improvements: Between 2022 and 2023, the LVVWD repaired and replaced approximately 4,700 linear feet of corroded pipeline to reduce water losses in system areas most susceptible to leaks and breaks. The LVVWD has prioritized additional system improvements as detailed below and will pursue these projects as funding allows:

- Construct a new 3630 zone pumping station to increase fire flow.
- Increase storage capacity by replacing or adding a reservoir.
- Develop a new back-up well to increase system reliability.

Rate Increase: As further described in Chapter 4, the LVVWD approved a rate increase in August 2021 (effective January 1, 2022) to establish a reserve fund for long-term system maintenance, fund day-to-day system operations and support water conservation efforts for area residents and businesses.

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Image: Blue Diamond, Nevada

SEARCHLIGHT WATER SYSTEM

The LVVWD became responsible for the Searchlight Water System through a 1988 Interlocal agreement with Clark County and assumed full ownership of the system in 2002. As of 2023, the Searchlight Water System supports 287 total active accounts, the majority of which are residential (Figure 2.7).

Searchlight Setting and Climate

Searchlight is situated in the southeastern portion of Nevada, approximately 60 miles south of Las Vegas and just east of U.S. Route 95 (Figure 2.8). Nestled within the Mojave Desert's Piute Valley, Searchlight is surrounded by federal lands that are protected from development.

The town experiences a typical desert climate characterized by extreme temperatures and low precipitation. Summer daytime temperatures range from 90°F to 110°F, and heat waves often push temperatures well above 110°F. Winter temperatures are relatively mild with daytime temperatures ranging between 50°F to 70°F and occasionally dipping below freezing. Annual precipitation averages around 7.8 inches per year, mostly during infrequent winter storms and summer monsoons.

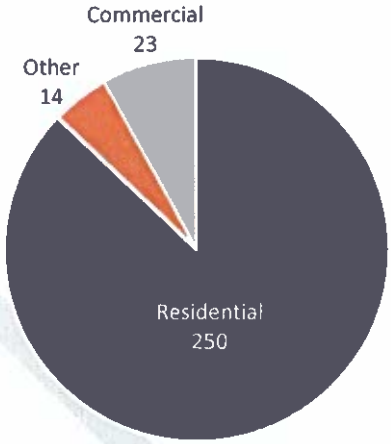
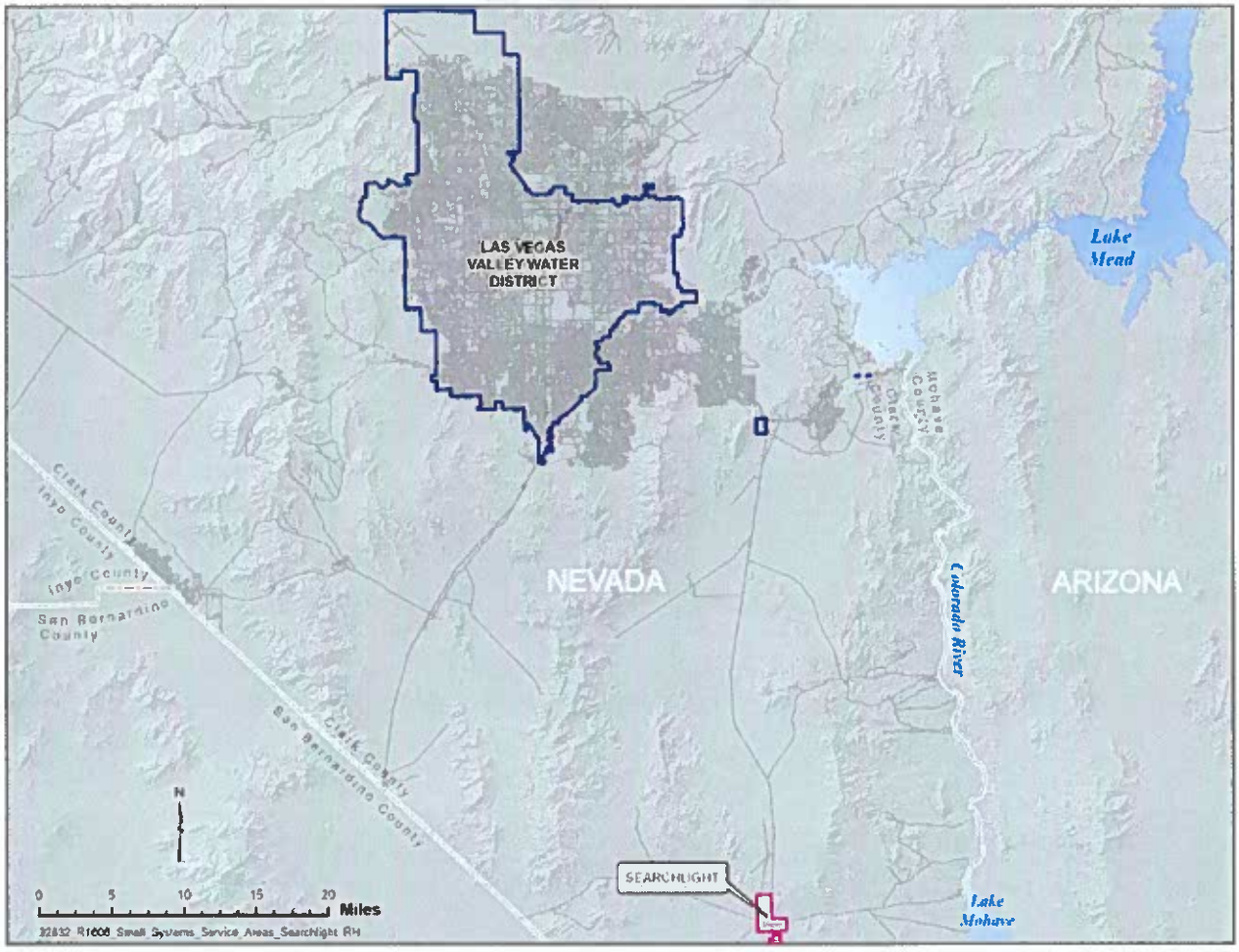


Figure 2.7: Account Summary

Figure 2.8: Location Map



Searchlight Water Sources and Facilities

The Searchlight Water System depends on local groundwater to meet community water demands. The LVVWD has rights totaling 4,353.95 AFY in the Piute Valley and Eldorado Valley hydrologic basins. As shown in Figure 2.9, the community is served by three wells and two storage reservoirs that have a combined storage capacity of 400,000 gallons. The community also has two pressure reducing valves (PRVs). The S-2 and S-3 wells serve as the community's primary production wells. The S-1 well provides additional production when needed and serves as backup for well maintenance and/or emergencies. The wells are not typically in use at the same time.

Searchlight's wells are recharged from precipitation and snowmelt runoff from the Lucy Gray Range, the Castle and McCullough mountains and groundwater flows from the adjacent up-gradient valley.

Image: Searchlight Water System

Figure 2.9: Searchlight Water System Major Facilities

Asset Type	Year Constructed	Pumping/Storage Capacity	Well Depth / Reservoir Elevation
S1 Well	1983	240 gallons per minute	528 ft.
S2 Well	1990	370 gallons per minute	900 ft.
S3 Well	2009	380 gallons per minute	825 ft.
S1 Reservoir	1982	200,000 gallons	3,709 ft
S2 Reservoir	1995	200,000 gallons	3,709 ft.

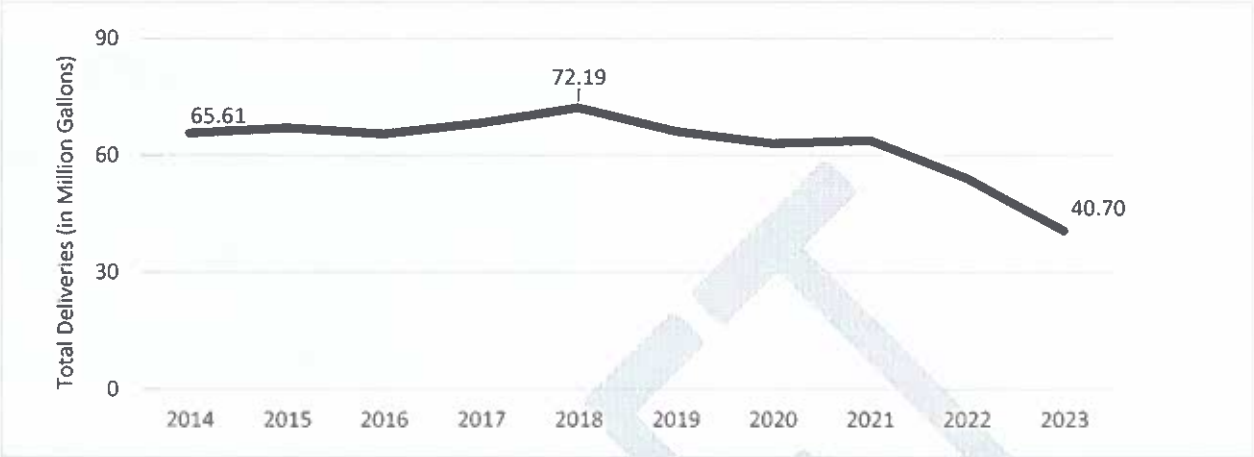
Searchlight Water Use

Figure 2.10 compares Searchlight's population and per capita water use from 2014 to 2023, reflecting a near 50 percent decrease GPCD since 2014. Among other factors, recent changes in per capita water use correlate with the population adjustments made by the Clark County Comprehensive Planning Department, reflecting the 2020 U.S. Census results, which revised the population from 399 in 2020 to 444 in 2021, an 11.2 percent increase.

Figure 2.10: Searchlight Population and Water Use Estimate

As further described below, the LVVWD also implemented significant system improvements that supported reductions in per capita water use and water deliveries. As of 2023, Searchlight water deliveries are down by more than 40.7 percent or 24.9 million gallons 2014 and down 43.6 percent or 32.4 million gallons since 2018 (Figure 2.11).

Figure 2.11: Searchlight Water Deliveries



2024-2029 Searchlight Water System Updates

System Improvements: The LVVWD replaced approximately 4,630 liner feet of pipeline (including 2, 4, 6 and 8-inch pipelines) within the Searchlight Water System between 2019 and 2021 to help reduce non-revenue water loss and improve overall water system efficiency. These improvements were designed and installed by LVVWD Maintenance Engineering and Distribution staff and funded by the Army Corps of Engineers.

The LVVWD is actively seeking additional funding for distribution system upgrades, including replacing approximately 600 linear feet of 2-inch water main with 6-inch pipeline and installing 460 linear feet of 6-inch pipe. The improvements will help improve system redundancy, reduce non-revenue water loss, conserve water and are required to meet current fire protection standards for existing residents. The LVVWD is also seeking funding to develop and equip a new groundwater production well that was started but not completed with Army Corps of Engineers funding.

Image: Searchlight, Nevada

KYLE CANYON WATER SYSTEM

The Kyle Canyon Water District (KCWD) was formed in 1973 as a General Improvement District pursuant to NRS Chapter 318. Clark County administers the district, but the water system has been operated and maintained by the LVVWD under contract with Clark County since 1974. As of 2023, the system supports 419 total active accounts, almost all of which are residential (Figure 2.12).

Kyle Canyon Setting and Climate

Kyle Canyon is in Clark County's Spring Mountains, approximately 35 miles northwest of Las Vegas on Mount Charleston (Figure 2.13). The community sits approximately 6,800 feet above sea level within the Humboldt-Toiyabe National Forest.

Kyle Canyon enjoys a cooler climate than the desert floor. Summers are generally mild, with daytime temperatures ranging from 70°F to 85°F. High temperatures can occasionally exceed 90°F during heat waves, but high temperatures are less common due to the higher elevation. Winters are cold, with daytime temperatures typically ranging from 30°F to 50°F. Kyle Canyon receives approximately 10.5 inches of precipitation annually and snow conditions are typical between November and April each year.

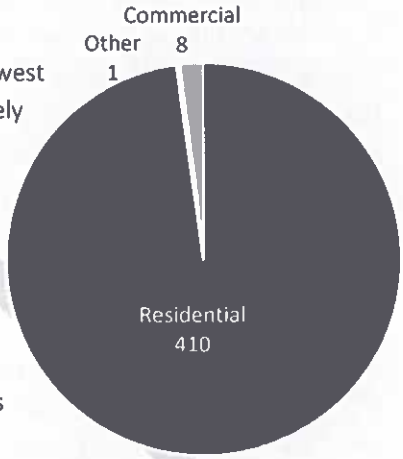
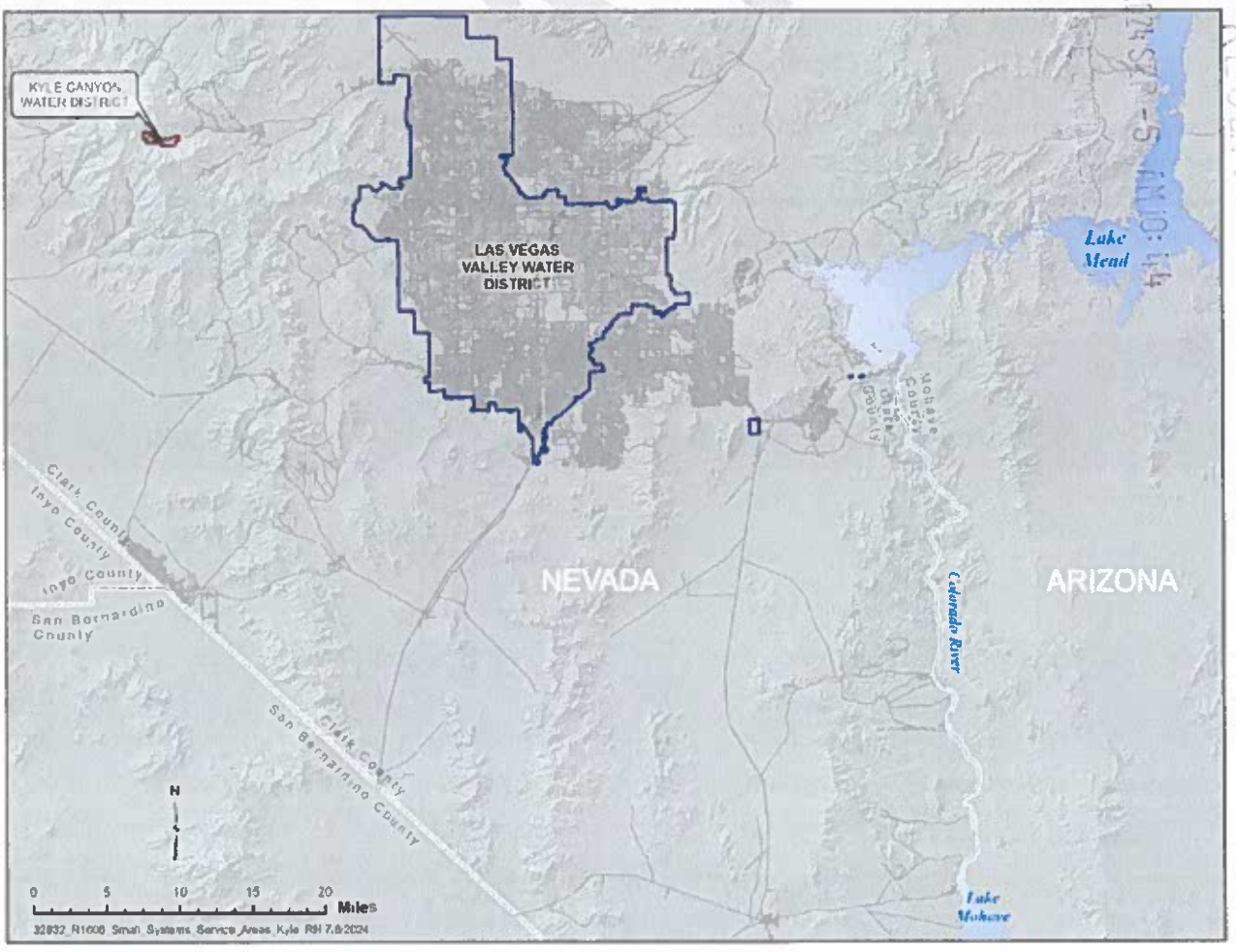


Figure 2.12: Account Summary

Figure 2.13: Kyle Canyon Location Map



Kyle Canyon Water Sources and Facilities

Groundwater is the sole resource used to meet community water demands. The system has rights totaling just over 480 AFY. As shown in Figure 2.14, the community is served by four groundwater wells and four storage reservoirs that have a combined storage capacity of 616,000 gallons. The system also includes several altitude valves and pressure reducing valves.

The groundwater system is recharged primarily by snowmelt of winter precipitation. Hydrologic conditions in the area over the last twenty years have been variable, with several individual years of extreme above and below normal precipitation, and an extended drought between 2012 and 2015.

Image: Kyle Canyon Echo Well No. 3

Above normal winter precipitation in 2005, 2011, 2017, 2019 and 2023 resulted in a large recharge pulse throughout the aquifer system, causing a sharp increase to groundwater levels between March and May of those years and artesian flow in Echo Well 3. Slightly above to slightly below normal winter precipitation resulted in muted spring recharge pulses. Significantly below-normal precipitation in 2002, 2011 and 2012-2015 resulted in negligible recharge pulses and raised concerns by LVVWD staff about the system's operational vulnerability. Winter-season precipitation from water year 2021 through June was comparable to 2002, one of the driest years on record.

Based on historical hydrologic and well-performance data from 2012-2015, wells are anticipated to continue to operate within the historical range and meet system requirements. However, long-term climate trends raise uncertainty as to how groundwater and well performance may respond to persistent downward trends beyond the observed 2012-2015 drought period. Increasing temperatures associated with climate change could affect the form of precipitation and snowmelt dynamics, resulting in potential reductions in groundwater recharge.

Figure 2.14: Kyle Canyon Major Facilities

Asset Type	Year Constructed	Pumping/Storage Capacity	Well Depth / Reservoir Elevation
Rainbow Well	1960	180 gallons per minute	286 ft.
Echo Well 3	1964	360 gallons per minute	286 ft.
Echo Well 4	1997	180 gallons per minute	530 ft.
Echo Well 5	2003	100 gallons per minute	245 ft
Echo View Reservoir	1982	100,000 gallons	7,961 ft.
Echo View West Reservoir	2006	300,000 gallons	7,942 ft.
Upper Rainbow Reservoir	2000	91,000 gallons	7,616 ft.
Lower Rainbow Reservoir	2000	125,000 gallons	7,503 ft

Kyle Canyon Water Use

Figure 2.15 compares Kyle Canyon's population and per capita water use from 2014 to 2023, reflecting a 11.3 percent GPCD decrease since 2014 (from 115 GPCD in 2014 to 102 GPCD in 2023). The 2020 census adjustment was less pronounced for Kyle Canyon, increasing by just 31 persons between 2020 and 2021.

Per capita water use in Kyle Canyon is much lower than in Blue Diamond and Searchlight. Unlike these communities, the LVVWD estimates that only about 50 percent of homeowners in the Kyle Canyon service area are full-time residents, a ratio that fluctuates from year to year. Outdoor water use is also limited during the winter months when snow conditions and freezing temperatures exist.

Metered water deliveries in 2023 were 20.18 million gallons. Except for a minor spike in 2020 that could be related to higher levels of occupancy during that timeframe, water deliveries have remained relatively flat since 2014 (Figure 2.16).

Figure 2.15: Kyle Canyon Population and Water Use Estimate

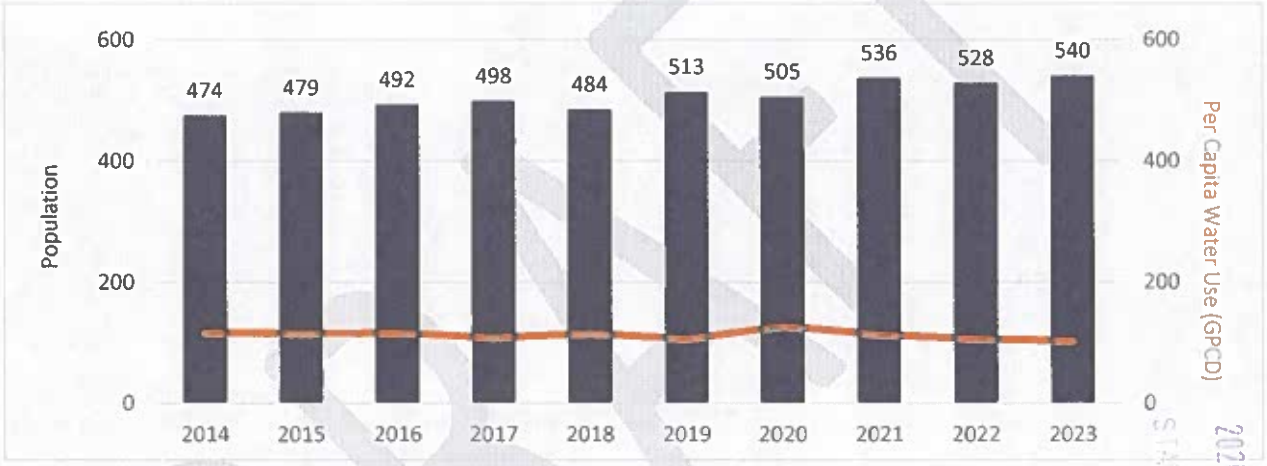
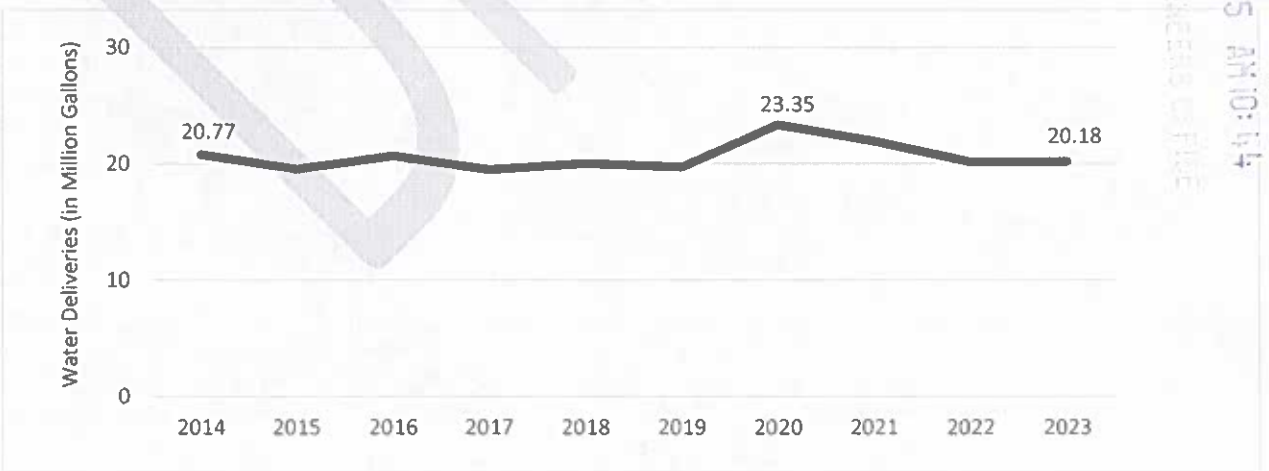


Figure 2.16: Kyle Canyon Water Deliveries



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2024-2029 Kyle Canyon Water System Updates

Emergency Repairs: Kyle Canyon experienced significant damages in 2023 due to Tropical Storm Hilary. High winds and heavy rains resulted in major flooding that wiped away roadways and restricted vehicle access, downed power lines and washed-out water mains. Water service was restored quickly to most of the system, but significant repairs were required in the Old Town area, which experienced heavy damage. Water loss rates for the community were high in 2023 due to flooding, broken mains and extensive system flushing to restore service.

Repair summary:

- Replaced ~2,000 linear feet of 6" PVC pipeline in Echo View and Old Town subdivisions.
- Replaced ~4,000 linear feet of 8" pipeline and 8" PVS pipeline in the Echo View subdivision.
- Replaced six fire hydrants that sustained damage.
- Replaced 43 services in Echo View and Old Town.

Image: Damage from Tropical Storm Hilary, August 2023

JEAN WATER SYSTEM

The LVVWD acquired the Jean water system from Clark County in 1985 and is responsible for system operations and maintenance. As of 2023, the system supports 28 total active accounts, providing potable and non-potable water for culinary and industrial uses, as well as fire flow to a handful of businesses and the Jean Conservation Camp, which is part of the Nevada Department of Corrections. As of 2024, there are no known permanent residents within the service area (Figure 2.18).

Jean Setting and Climate

Jean is a small unincorporated town in the Ivanpah North Valley administered by Clark County. As shown in Figure 2.18, the town is approximately 30 miles south of Las Vegas and 12 miles north of the Nevada-California state line along Interstate 15.

Jean's climate is typical of the Mojave Desert. Summers are extremely hot with average daytime temperatures ranging from 95°F to 110°F. Temperatures above 110°F are not uncommon for extended periods. Winters are mild, with daytime temperatures generally ranging from 50°F to 65°F. Annual precipitation is very low, averaging around 4 inches per year. Arid conditions and sparse vegetation are characteristic of the town's dry and dusty landscape.

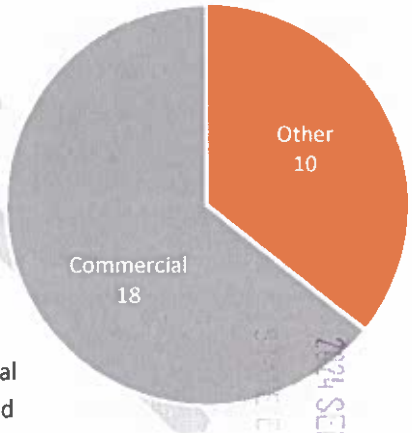
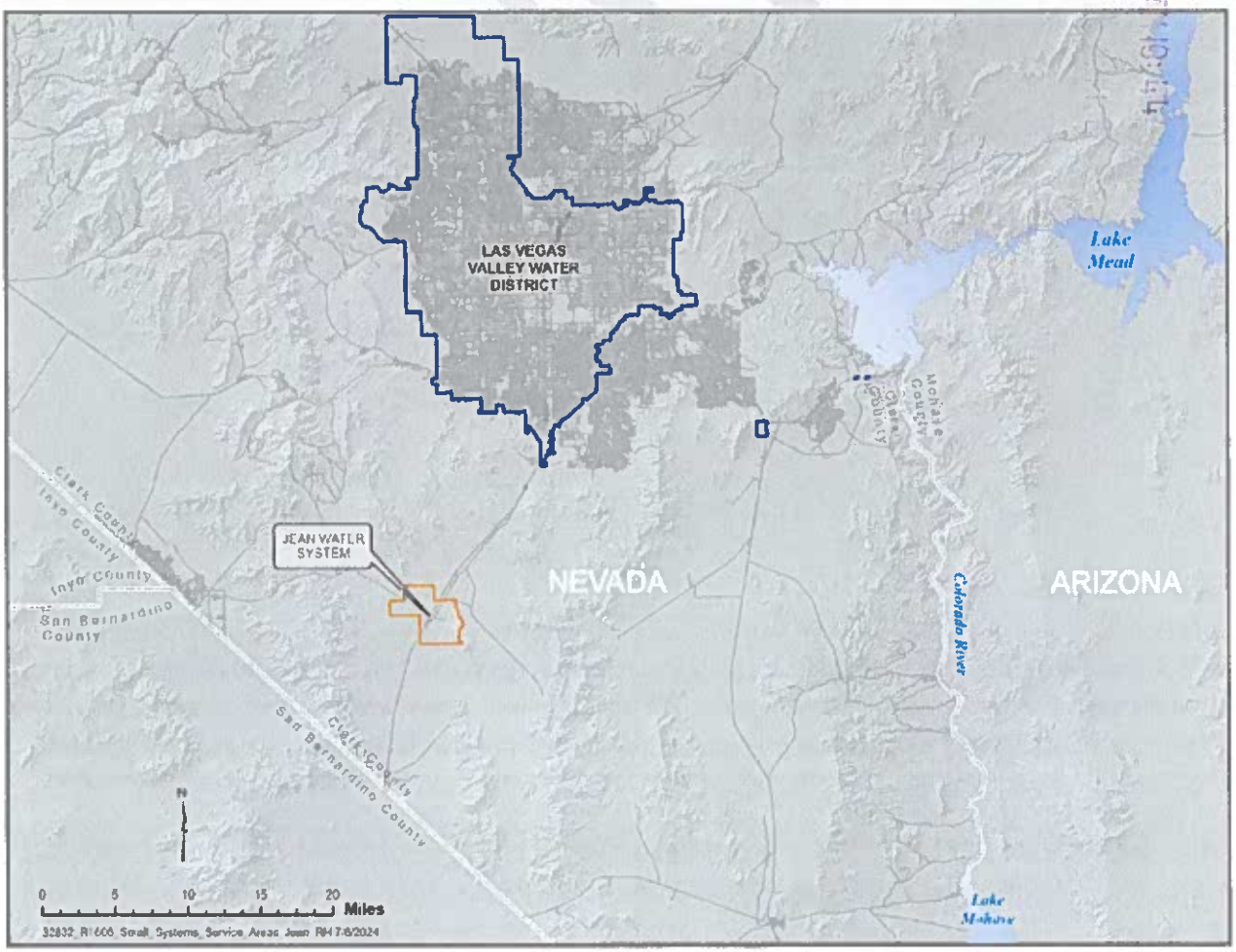


Figure 2.17: Account Summary

Figure 2.18: Jean Location Map



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Jean Water Sources and Facilities

Groundwater is the sole resource used to meet area water demands. The system has rights totaling 650 AFY plus 90 percent of any water recharged back into the groundwater basin for a maximum duty of up to 815 AFY. As shown in Figure 2.19, the community is served by four groundwater wells and three reservoirs with a storage capacity of two million gallons. The water distribution system includes a potable water system and a non-potable water system. If needed, potable water can be transferred to the non-potable tank. Non-potable water is used mostly for fire protection, manufacturing activities and irrigation.

The wells are supplied by groundwater from the Ivanpah Valley aquifer, which is recharged from the southern end of the Spring Mountains and the New York Mountains. Static groundwater levels near the Jean production wells have only fluctuated a maximum of approximately seven feet over the last 27 years. In 2022, groundwater levels were higher than they were in the late 1980s when the LVVWD began operations of the system. This suggests the aquifer has sustained well pumping without inducing long-term downward groundwater-level trends.

Image: Jean Lake (or Jean Dry Lake) in north Ivanpah Valley.

Figure 2.19: Jean Water System Major Facilities

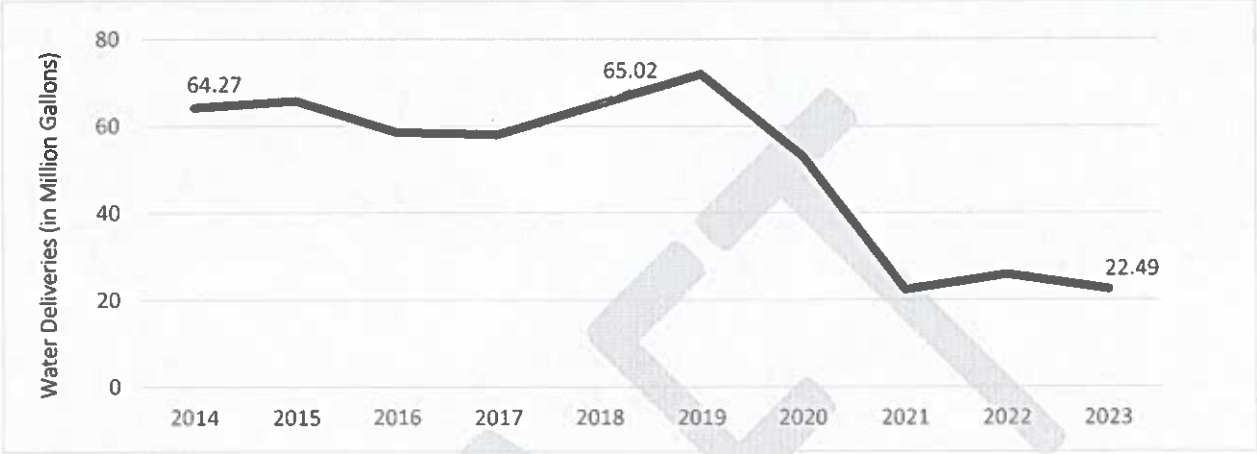
Asset Type	Year Constructed	Pumping/Storage Capacity	Well Depth / Reservoir Elevation
State Well J2	1982	125 gallons per minute	839 ft.
Goldstrike Well J3	1988	150 gallons per minute	909 ft.
J-8 (Replaces Midway)	2019	600 gallons per minute	1,840 ft.
Jean Well J7 (non-potable)	2008	225 gallons per minute	680 ft
Reservoir I (non-potable)	1982	1,000,000 gallons	3,054 ft.
Reservoir II	1982	400,000 gallons	3,054 ft.
Reservoir IV	2010	600,000 gallons	3,054 ft.

Jean Water Use

As previously noted, there are no known residents living in the Jean service area. As such, the LVVWD has not included an estimate of per capita water use. Most of the Ivanpah North Valley is administered by the Bureau of Land Management, with few private land holdings. The lands comprising the town of Jean are privately held by a mix of commercial and industrial businesses. Additional private lands are held by local, county and state agencies for municipal and social infrastructure. A large section of land between Jean and Primm and parallel to I-15 has been withdrawn from federal reservation and is owned by Clark County for the planned Ivanpah Airport.

Figure 2.20 reflects total Jean Water System deliveries from 2014 through 2023. The system delivered 22.49 million gallons of water in 2023, down 41.78 million gallons or 65.0 percent since 2014 and down 42.53 million gallons or 65.41 percent since 2018. Water use reductions are largely related to the closure of the Terrible's Hotel & Casino. The property was demolished in 2023 to make way for an industrial complex. To date, the project has not moved forward.

Figure 2.20: Jean Water Deliveries



2024-2029 Jean Water System Updates

Facility Improvements: The LVVWD developed and equipped a new potable groundwater well (Well J8) and put the well into production in 2023. The well replaces the water system's failing Midway Well (J4) that was drilled in 1990 and has since been retired.

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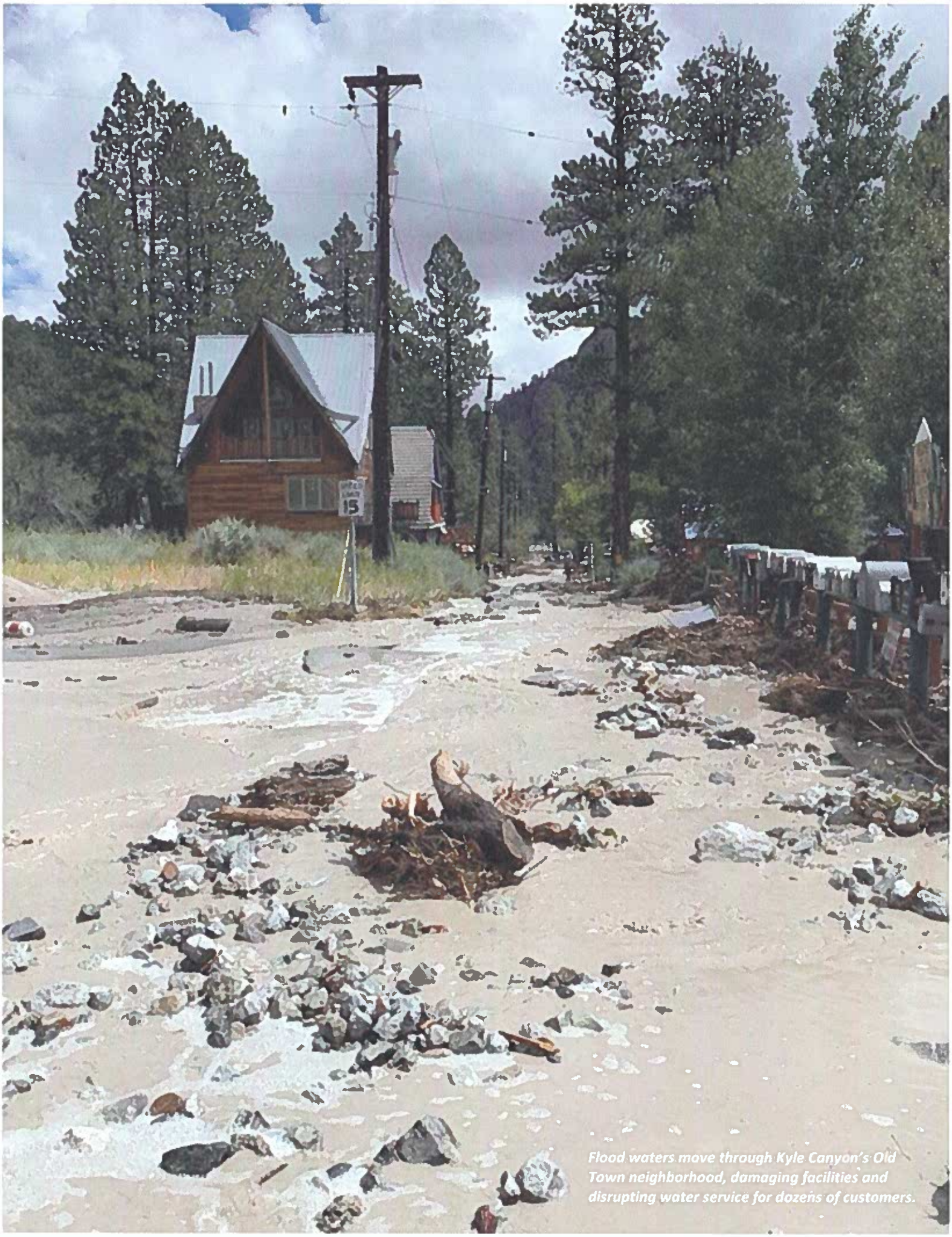

Flood waters move through Kyle Canyon's Old Town neighborhood, damaging facilities and disrupting water service for dozens of customers.

CHAPTER 3: WATER MANAGEMENT AND LOSS PREVENTION

This chapter describes the water resource management and water loss prevention measures implemented by the LVVWD to help optimize and sustainably manage the limited water resources available to the communities of Blue Diamond, Kyle Canyon, Searchlight and Jean.

The LVVWD assumed responsibility for the small water systems described in this Plan between 1974 and 1992. In most cases, the systems required extensive retrofits and repairs to safely and reliably meet the water supply needs of the communities served. These efforts are ongoing as the systems age, and the LVVWD continues to collaborate with the affected communities to assess critical needs, prioritize repairs and leverage grant funding to phase-in necessary improvements. As further described below, the LVVWD also implements municipal water management measures and water loss reduction strategies to reduce system losses and improve water efficiency.

MUNICIPAL WATER MANAGEMENT MEASURES

Universal Metering

The LVVWD meters all customer connections for all classes of water, including source water metering. The LVVWD bills small system customers monthly based on water use. Water bills include graphics that allow customers to track and compare water use from month to month and year to year. As further detailed in Chapter 4, the LVVWD also monitors customer water use for consumption anomalies such as spikes in use that indicate possible leaks. Meters are replaced as needed to enhance accuracy and reduce apparent losses. All LVVWD small systems are equipped with Advanced Metering Infrastructure (AMI), providing near real-time consumption data, improving customer billing and offering higher resolution data for research and analysis.

System Maintenance

The LVVWD performs regular system maintenance to ensure operational efficiency and minimize water loss. This includes routine inspections of production wells and reservoirs, and maintenance and calibration of production meters. The LVVWD also monitors system water use and dispatches crews to address significant leaks as identified.

Leak Monitoring and Notification

LVVWD maintains water pumping records retrievable through its Supervisory Control and Data Acquisition (SCADA) system, providing real-time, high-speed communications over a wide area. The system monitors data from various sensors and transmits real-time data back to LVVWD for analysis. Small systems are monitored continuously for sudden changes in reservoir water levels and water pressure. Anomalies are investigated by comparing trends with meter data to determine if changes are customer related. If not, portable leak detection equipment is deployed, pipeline sections are isolated to check for pressure drops, and physical inspections are conducted to identify visible leaks.

Water System Improvements

The greatest opportunity for water savings in Blue Diamond and Searchlight will come from improving aging infrastructure. The LVVWD continues to seek state and federal grants to support costly improvements that local communities cannot afford without assistance. Recent improvements include thousands of feet of new pipeline

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in Kyle Canyon, Searchlight and Blue Diamond completed between 2021 and 2023, and the development and equipping of a new groundwater well in Jean. While the LVVWD focuses on water quality and system reliability needs, identifying and repairing leaks within the small system areas remains an ongoing priority.

Water Pressure Management

Water pressure varies based on the proximity of the property to the serving reservoir. Peak water uses and routine water system operations can cause fluctuations. Most small system water customers operate within a pressure range of 80-85 pounds per square inch (psi), although some instances may see higher or lower pressure. Pressure reducing valves (PRVs) are used when needed to manage pressure.

The LVVWD uses SCADA to monitor and adjust system pressure, routinely calibrates PRVs and dispatches crews for repairs when necessary. Proper pressure management saves water in irrigation by reducing misting and indoors by lowering fixture flow rates and mitigating leak flows.

Water Reuse

Given the small and static size of the communities served, and the high cost of retrofitting, it is currently not financially feasible to develop and implement water reuse systems.

WATER LOSS REDUCTION PLAN

All water delivery systems experience losses, known as non-revenue water or unaccounted water. Non-revenue water losses are typically associated with leaks (real losses) and variations in meter accuracy, unbilled authorized consumption and water theft (apparent losses).

NRS requires Nevada water purveyors to estimate water losses, establish goals for acceptable levels of water loss in municipal water supplies and develop plans to progress toward established water loss reduction goals. The LVVWD tracks non-revenue water losses for each of the small systems, which is calculated by subtracting total deliveries of water supplied to each system from the amount of water billed to its customers. The combined volume of non-revenue water losses for all four small systems was 24.4 million gallons in 2023, approximately 75 acre-feet.

Non-Revenue Water Loss Reduction Goal

Figure 3.1 compares the 2023 non-revenue water loss rate for each system against the national average and includes a Water Loss Reduction Goal for the current Plan period. The LVVWD aims to reduce the combined non-revenue water loss for all systems by approximately 1.4 million gallons or 4.5 acre-feet and will report progress in the next Plan update.

The LVVWD aims to maintain Jean's water loss rate at 16 percent. While this system's water losses have historically been very low (about 3 percent), the recent equipping of Well J-8 has resulted in additional non-revenue water losses due to well flushing requirements. This authorized unbilled consumption is necessary for operations and to maintain water quality. Under the current operating framework for this system, the current water loss rate is reasonable and expected to continue.

Water Loss Reduction Strategies

The LVVWD will work to achieve its non-revenue water reduction goals for each of the small systems by continuing to employ the base water management strategies detailed earlier in this chapter, including universal metering, system maintenance, leak monitoring, water system improvements and pressure management. As further detailed

below, additional strategies to address non-revenue water losses include tracking, expanded meter replacements to reduce apparent losses and system improvements to address real losses associated with leaks.

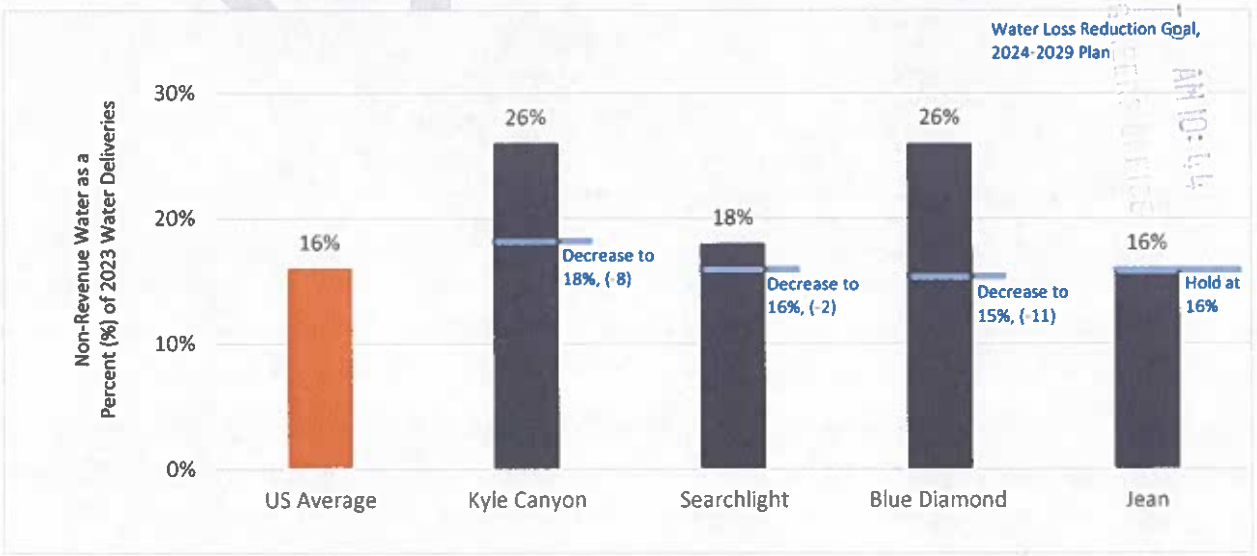
- Track and report non-revenue water: The LVVWD will track and report non-revenue water to monitor progress, analyze data trends and support intervention projects that reduce non-revenue water losses.
- Implement a large meter replacement program: The LVVWD will develop and deploy a proactive large meter replacement plan for Kyle Canyon, Blue Diamond and Searchlight, focusing on high usage meters and/or larger meters, which includes replacing existing large two-inch and larger meters with new ultrasonic meters. Ultrasonic meters provide higher-resolution data that will allow the LVVWD to better analyze customer water use and consumption trends. The LVVWD will also test and inspect meters more frequently to identify non-functioning meters.

Photo: A field technician replaces a water meter.

- Conduct additional main line replacements in Searchlight as grant funding allows: Replace approximately 600 linear feet of 2-inch water main with 6-inch pipeline and install 460 linear feet of 6-inch pipe.
- Conduct additional leak detection in Kyle Canyon, Blue Diamond and Searchlight to identify and prioritize needs for leak repair.

Figure 3.1: Non-Revenue Water Loss Estimate Based on 2023 Water Deliveries (in Million Gallons (MG) and % of Total Deliveries)

	Kyle Canyon	Searchlight	Blue Diamond	Jean
Total Delivered	20.18	40.70	32.61	22.49
Total Billed	14.97	33.18	24.26	18.82
Non-Revenue Water	5.21	7.25	8.35	3.67



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Native Milkweed Plant

CHAPTER 4: SPECIFIC WATER CONSERVATION MEASURES

This chapter describes specific water conservation measures used by the LVVWD to stretch available water supplies and promote the efficient use of water in the small system communities served.

DEVELOPMENT CODES AND POLICIES

As detailed in Figure 4.1, Kyle Canyon, Searchlight, Blue Diamond and Jean water systems are subject to applicable Clark County development codes and ordinances, including provisions relating to water waste and landscape irrigation.

Figure 4.1: Landscape Codes and Other Conservation Policies

RESTRICTION	DETAIL
Landscape Watering	Under normal conditions, landscape watering is limited to one day/week in winter, three days/week in spring and fall, and six days/week in summer. Spray irrigation is prohibited from 11 a.m. to 7 p.m. from May 1 – August 30. Sunday spray irrigation is prohibited year-round. Kyle Canyon customers are subject to additional restrictions. During Concerned Operating Conditions, landscape irrigation is limited to one day per week in spring and fall and two days per week in summer. Customers may water one day a week during Critical Operating Conditions and are prohibited from irrigating during an Emergency Operating Condition.
Vehicle Washing	A positive shutoff nozzle is required for residential vehicle washing.
Turf Provisions	Turf is prohibited in new development, except for parks, schools and cemeteries.
Pools	New residential pools are limited to a maximum surface area of 600 square feet.
Mist Systems	Commercial use of mist systems prohibited except from May – August from 12 p.m. to 12 a.m.
Golf Courses	The development of new golf courses is prohibited.
Fountains and Water Features	Residential fountains and water features greater than 10 square feet are prohibited at residential properties. All other fountain and water features are prohibited, unless they are located entirely indoors.
Prohibitions on Water Waste	– Allowing water to spray or flow off a property. – Watering outside of assigned day(s). – Failure to comply with landscape codes and service restrictions. – Using sprinklers from 11 a.m. to 7 p.m. between May 1 and August 31. – Failure to repair a malfunctioning irrigation system or supply line within 48 hours.

INCENTIVE PRICING AND BILLING

Water rates for Searchlight customers and Kyle Canyon residential customers include a daily service charge plus a flat rate for water based on metered consumption, billed in 1,000-gallon increments. The Jean and Blue

Diamond water systems have increasing block rate structures with multiple thresholds for water fees, and the Kyle Canyon system has an increasing block rate for non-residential accounts. While actual rates and fees vary by system, the more water a customer uses, the higher the bill paid.

The LVVWD approved a rate increase for Blue Diamond in August 2021 (effective January 1, 2022) to establish a reserve fund for long-term system maintenance, day-to-day system operations and water conservation efforts for area residents and businesses. The increase was phased in gradually between 2022 and 2025 with annual increases to the daily rate and incremental adjustments to the second, third and fourth tiers. Beginning in 2026, water rates will adjust annually in accordance with the Consumer Price Index. The LVVWD will investigate the implementation of increasing block rates for its other small system customers as part of future rate setting processes.

WATER EFFICIENCY STANDARDS

New residential or commercial buildings must incorporate state and federal standards for plumbing fixtures. As shown in Figure 4.2, this includes water-use standards for toilets, faucets, showerheads and urinals.

The Nevada Legislature approved legislation in 2019 to require new residential, commercial and industrial structures completed after 2020 to meet any WaterSense final product specifications for toilets, urinals, showerheads and faucets developed by the United States Environmental Protection Agency. Further amended in 2023, the legislation requires residential, commercial and industrial structures completed after 2024 to meet WaterSense product specifications for irrigation controllers.

CURRENT STANDARD	
Toilet	1.28 gallons/flush
Urinal	0.5 gallons/flush
Showerhead	2.0 gallons/minute
Faucets	1.5 gallons/minute
Irrigation Controller	Water Sense Certified

Figure 4.2: Water Efficiency Standards

OUTREACH AND EDUCATION PROGRAMS

The LVVWD promotes water conservation in several ways, including education, outreach and community engagement. The following describes LVVWD's small systems outreach efforts, as well as other valley-wide resources available to small system customers.

LVVWD Website

The LVVWD's website (lvvwd.com) promotes water conservation among all water users. Resources include:

- Video tutorials on how to find and fix leaks in irrigation systems, pools/spas, water softeners, main service lines and toilets.
- Video tutorials and tips for improving indoor water efficiency (installation and use of high-efficiency appliances, faucet aerators, showerheads and toilets).
- Video tutorials and tips for maintaining landscapes year-round (irrigation system operations, testing/fine tuning stations, setting/adjusting irrigation clocks, and checking/repairing watering systems).
- Cold weather tips (plant fertilization and pruning, turf care, protecting/maintaining pipes and hoses, and maintaining pools).
- Warm weather tips for dealing with common landscape challenges such as brown spots, burned or scorched leaves and compacted soils.
- Informational resources on turf care and plant selection. Visitors can browse the website for desert-friendly plants with information on water requirements, maintenance, growth rates and photos. Other resources include the Southern Nevada Water Authority's website (snwa.com), which offers free tips and resources that help residents save water.

Water Bill Messages

Small system customers receive a customized bill that includes comparative information on their property's water use. Unusually high consumption could indicate the presence of a leak and customers are encouraged to look for and address potential problems.

Community Engagement

The LVVWD has dedicated community liaisons for the Kyle Canyon, Blue Diamond and Searchlight water systems. Staff will continue to attend monthly Town Advisory Board meetings to share information with the communities served related to water conservation and system operations. Liaisons provide regular updates, answer questions and coordinate more formal updates/presentations to the community as needed.

Construction Outreach and Emergency Communications

The LVVWD maintains several outreach tools to communicate with customers related to planned and unplanned outages. For example, the LVVWD scheduled daily outbound calls to customers, participated in press conferences and issued email updates to Kyle Canyon residents as work was underway to restore water service following system outages related to Tropical Storm Hilary.

Youth Education

The LVVWD's Springs Preserve is a 180-acre museum complex that includes museums, galleries, gardens and trails. The Preserve offers free self-guided field trips to local schools, including schools located in the small system service areas. Through visual and participatory experiences, visitors learn more about natural resources, including water resource, conservation and sustainability topics.

Conservation Helpline

The SNWA operates a Conservation Helpline (702-258-SAVE) available to all Southern Nevada residents, including small system customers. The Helpline provides customers with a resource to ask conservation questions, report water waste and obtain general water conservation information.

INCENTIVE PROGRAMS

The LVVWD will work to identify state and/or federal funding opportunities to support the development of an indoor retrofit incentive program within the five-year planning horizon. If funding is available, the LVVWD will distribute low-flow aerators, low-flow showerheads and toilet flappers to small system customers. These items can significantly reduce indoor water use and extend available supplies.

The LVVWD plans to use a portion of the Blue Diamond rate increase to support limited turf conversions in the community. Currently, funding is insufficient to support turf removal programs in Kyle Canyon and Searchlight.

LEAK MONITORING, ANALYSIS AND CUSTOMER OUTREACH

The LVVWD billing system automatically monitors customer water use for potential leaks. Accounts registering 24-hours of water use of 10 gallons or more per hour for three consecutive days receive an automated call that alerts customers to potential problems. Small system operators also review account water use reports regularly and reach out to customers by phone or in person to advise them of a possible on-site leak. This proactive approach has helped to speed up leak repairs.

OTHER

Encourage Drip Irrigation for Trees and Shrubs

While trees and shrubs provide a host of benefits, they also can be a source of inefficient watering. Some small

systems residents use hand-placed sprinklers or hand water to irrigate their landscapes. Drip systems are more efficient than sprinklers or hand irrigation. Drip systems limit the amount of water wasted and provide a deeper soak than sprinklers.

The LVVWD produces online and print communications to encourage residents to use drip systems to water trees and shrubs. LVVWD also encourages residents to visit lvvwd.com for more information about drip irrigation or visit the Springs Preserve, which offers free classes hosted by the SNWA on drip system installation and other landscape efficiency offerings.

Encourage the Use of Native or Desert-Adapted Plants in Landscape Design

While many small system customers have limited turf, the LVVWD encourages residents with ornamental turf to use native and drought-tolerant plants when making landscape changes. Native and desert-adapted landscapes in the Las Vegas Valley use approximately 55 gallons less water per square foot than turf grass.

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Searchlight Water System

CHAPTER 5: DROUGHT CONTINGENCY PLAN

This chapter details how the LVVWD is working to anticipate and adapt to changing climate conditions within its small system service areas. It also describes response measures that can be employed when needed to help ensure sustainable use of community water supplies.

The LVVWD closely monitors its small systems for changes in water use, hydrology and system infrastructure that can impact community water service. This work includes monitoring well production and groundwater level trends to help inform operational strategies and customer communications.

For actual or anticipated water service interruptions related to drought, the LVVWD will take steps to reduce water demands by enforcing provisions within its service rules for each of the small system service areas. These rules allow LVVWD to reject, rescind, reduce or terminate current or proposed uses of water where such uses:

- Are contrary to the LVVWD's obligation to ensure reasonable use including, but not limited to, compliance with rules for water efficiency, drought, conservation and the use of non-potable water for irrigation.
- May encumber or impair the LVVWD's ability to maintain an adequate level of service to other customers.
- Compromise public health, welfare or safety due to circumstances that limit the available water supply to the water system.

In the event of a continued and sustained drought where water levels in system wells reach depths that pose risk to drinking water supplies, the LVVWD will focus on reducing non-essential water uses and water waste. Specific drought response efforts may include the following:

Mandatory Watering Restrictions

In addition to the water use restrictions defined in Clark County ordinance and described in Chapter 3, the LVVWD could implement landscape watering restrictions that would further limit or prohibit landscape watering. These measures would help to preserve system supplies health and safety and reduce operational demands on system infrastructure. If implemented, the nature and duration of these restrictions would be based on local water supplies and system conditions.

The Kyle Canyon Water District approved a water management plan in 2003 to address declining water levels in system wells. The plan describes system operating ranges based on well levels (sustainable, concerned and critical) and prescribes additional landscape watering restrictions based on service address. Under an emergency condition, all outdoor water use is restricted.

Customers are subject to the water waste prohibitions as described earlier in this chapter. While the LVVWD does not actively conduct water waste investigations in its small systems due to the cost and labor associated with patrolling remote locations, LVVWD may implement enforcement activities if local conditions warrant.

Drought Surcharges

Drought surcharges are temporary pricing signals intended to encourage reductions in water consumption during drought conditions. The LVVWD could implement a drought surcharge, which could be modified as needed based on community performance in meeting water demand reduction needs to ensure a reliable potable water supply.

Notification of Well Operating Conditions

The LVVWD will make efforts to notify customers via phone, email, web and/or other available means if or when known water operating conditions are expected to pose a risk to continued water services. Notices will include instructions for reducing water use and other relevant information.

Alternate Supply

In the event of an emergency water-service interruption, the LVVWD has plans in place to provide limited-term potable water supplies until service is restored. Supply options could include bottled water and/or water truck deliveries and well deepening. Given Blue Diamond's proximity to the LVVWD service area, a temporary connection between the LVVWD and Blue Diamond Water System could be pursued for that system if necessary to ensure reliable potable water service. The location and proximity of other service areas make temporary connections cost prohibitive and too geographically complex to implement.

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CHAPTER 6: IMPLEMENTATION, EVALUATION & ESTIMATED SAVINGS

Figure 6.1 summarizes the water conservation and water management efforts detailed in this plan (Chapter 4 and Chapter 5), including the timeline for implementation. Unless otherwise noted, these conservation measures apply to each of the small water systems.

Figure 6.1: Plan Implementation Schedule

CONSERVATION MEASURE	2024	2025	2026	2027	2028	2029
Universal Metering						
Routine meter repair and replacement	x	x	x	x	x	x
Large meter replacements (ultrasonic meters)		x	x	x	x	x
Advanced Meter Reading (AMI)	x	x	x	x	x	x
Account monitoring (leak prevention)	x	x	x	x	x	x
Incentive Pricing and Billing						
Metered/consumption-based rates	x	x	x	x	x	x
Tiered rates (Jean, Blue Diamond, Kyle Canyon-Commercial)	x	x	x	x	x	x
Development Codes and Policies						
Landscape watering restrictions	x	x	x	x	x	x
Vehicle washing restrictions	x	x	x	x	x	x
Turf restrictions	x	x	x	x	x	x
Pools size limitations	x	x	x	x	x	x
Mist systems	x	x	x	x	x	x
Golf courses moratorium	x	x	x	x	x	x
Fountains and water features	x	x	x	x	x	x
Water efficiency standards	x	x	x	x	x	x
WaterSense certified fixtures in new development	x	x	x	x	x	x
Water Loss Management and Operations						
System maintenance	x	x	x	x	x	x
Water pressure management	x	x	x	x	x	x
Additional leak detection		x	x	x	x	x
Outreach and Education						
Website (lvvwd.com and snwa.com)	x	x	x	x	x	x
Online video tutorials, tips and resources	x	x	x	x	x	x
Bill messages/inserts and print communications	x	x	x	x	x	x
Community engagement	x	x	x	x	x	x
Youth education	x	x	x	x	x	x
Conservation helpline	x	x	x	x	x	x
Other						
Water system improvements	Implement as funding allows					
Incentive programs	Implement as funding allows					
Tiered rates (Searchlight and Kyle Canyon-Residential)	Evaluate during next rate setting process					
Drought Contingency Plan	Implement as needed					

EVALUATION

The LVVWD will evaluate the effectiveness of this plan by comparing changes in per capita water use, water deliveries and changes in non-revenue water loss. As detailed in Chapter 2, water deliveries for each of the small systems have been down since the last plan update. Changes in the estimated population related to the 2020 census results make it difficult to compare per capita water use over the prior plan period.

Figure 6.2 includes an estimate of water savings by individual conservation measure. The LVVWD will continue to monitor infrastructure needs, system operations, community water supplies, water-use trends and conservation progress over the five-year planning horizon. Likewise, the team will determine if additional community outreach is needed to elicit additional conservation savings or if other actions may be required.

ESTIMATED WATER SAVINGS

Figure 6.2 Estimated Annual Water Savings

CONSERVATION MEASURE	KYLE CANYON	BLUE DIAMOND	SEARCHLIGHT	JEAN
Universal Metering	887,000 gallons/year	682,000 gallons/year	680,000 gallons/year	100,000 gallons/year
Incentive Pricing & Billing[3]	394,000 gallons/year	530,000 gallons/year	302,000 gallons/year	300,000 gallons/year
Development Codes & Policies	493,000 gallons/year	303,000[4] gallons/year	378,000 gallons/year	50,000 gallons/year
Water Loss Management & Prevention[5]	739,000 gallons/year	1,136,000 gallons/year	1,284,000 gallons/year	250,000 gallons/year
Incentive Programs (Retrofit Fixtures)	591,000 gallons/year	454,000 gallons/year	604,000 gallons/year	8,000 gallons/year
Encourage Drip Irrigation for Trees & Shrubs	148,000 gallons/year	151,000 gallons/year	227,000 gallons/year	5,000 gallons/year
Encourage Native Landscaping in Landscape Upgrades	296,000 gallons/year	454,000 gallons/year	378,000 gallons/year	3,000 gallons/year
Education ^ Outreach	197,000 gallons/year	182,000 gallons/year	302,000 gallons/year	5,000 gallons/year

[3] Assumes rate signal is maintained over the planning period. There is significant variability in rates across the small systems.
[4] Water savings estimate is for existing community only. Does not include impact from development codes as this community has a moratorium on new water commitments. Does not include likely significant savings yielded directly by the moratorium.
[5] Includes anticipated reduction of 1.4 million gallons per year in lost non-revenue water due to planned improvements.

APPENDIX 1 – CLARK COUNTY ORDINANCES

Chapter 24.30 - WASTE OF WATER FROM PUBLIC WATER SYSTEM

24.30.010 - Definitions.
As used in this chapter, unless the context otherwise requires, the following words shall have the meanings ascribed to them:

(1) "Customer" means any person who is an owner, occupant, manager or user of real property to which water is supplied by a public water system, any person who uses water supplied by a public water system, any person who is billed for the supply of water from a public water system, or any person who otherwise has the right or permission to utilize water provided by a public water system, but does not include any firefighting department or agency.

(2) "Notice of violation" means a written warning which describes how water is being wasted and warns the customer that it is unlawful to waste water after service of the notice.

(3) "Public water system" means any publicly or privately owned network of pipes, conduits, wells, reservoirs, holding tanks and other components, including any combination thereof, which supplies water to customers who are charged a fee of any kind or nature for such purpose or which is designed to supply water or is capable of supplying water to customers for a fee and includes any such system whether or not it is operated under the regulatory authority of the Nevada Public Service Commission, but does not include any irrigation company or district whose primary purpose is to supply water for farming.

(4) "Service of a notice of violation" means:
(a) Personal service upon a customer.
(b) Personal service upon a person of suitable age and discretion residing at the customer's residence or working for the customer at the place where the waste of water initiates;
(c) Posting such notice upon the premises where the waste of water initiates; or
(d) Mailing a copy of such notice to the customer at his address as shown on the records of the public water system.
(5) "To waste water" means the expenditure or application of water from a public water system that results in water:
(a) Flowing into any gutter, street, sidewalk, swale or storm drain in a steady stream or flow during the course of a period of five or more continuous minutes; or
(b) Collecting in pools or any depressed area in a public street, sidewalk or right-of-way to a depth of two inches or more.
(Ord. 2934 § 3, 2003: Ord. 1213 § 1, 1990)

24.30.020 - Unlawful to waste water when.
(a) It is unlawful for any customer of a public water system to waste water in the unincorporated areas of the county after having been served a notice of violation for wasting water from the same location or premises.

(b) It is unlawful for any owner, occupant or manager of real property in the incorporated areas of the county to allow the waste of water from such property after there has been a service of a notice of violation for wasting water from the same premises.
(Ord. 1213 § 2, 1990)

Chapter 24.34 - WATER USE RESTRICTIONS

24.34.020 - Limitation on irrigation.
From May 1st through August 31 of each calendar year from the hours of eleven a.m. until seven p.m. it is unlawful for any customer of a public water system to use water within the unincorporated areas of the county for the purpose of irrigating, regardless of method, exterior lawns, gardens, trees, grass, shrubbery, or other vegetation except as provided in Section 24.34.030.

(Ord. 2934 § 4, 2003: Ord. 1271 § 1 (part), 1991)

(Ord. No. 4515, § 1, 9-6-2017)

24.34.030 - Exceptions.
The provisions of Section 24.34.020 do not apply to:

(a) Hand watering.
(b) Irrigation of new lawns, for a period of thirty days from planting or the date of installation.
(c) Irrigation by commercial gardens, plant nurseries, retail marijuana cultivation establishments or medical marijuana cultivation facilities licensed in accordance with Title 6 or Title 8 of this code, provided the licensee or his representative are personally on the premises at the time watering is taking place.
(d) Irrigation system testing; provided that the individual conducting the test must be present and observe sprinkler performance.
(e) Landscape irrigation audits; provided that the auditor performing the test must be present and observe sprinkler performance.
(f) Irrigation from a low-volume drip system or subsurface watering system.

(Ord. 1702 § 2, 1995: Ord. 1403 § 1 (part), 1992: Ord. 1271 § 1 (part), 1991)
(Ord. No. 4244, § 3, 10-21-2014; Ord. No. 4486, § 3, 5-16-2017; Ord. No. 4515, § 1, 9-6-2017)

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24.34.040 - Violations and penalties.
Any person violating any of the provisions of this chapter is guilty of a misdemeanor and, upon conviction thereof, shall be punished as provided in Section 1.01.040 of this code. Additionally, any person, group of persons, partnership, corporation or other business or governmental entity which is not a public utility regulated by the Public Service Commission of Nevada and which furnishes water to persons who violate the provisions of this chapter may reduce or terminate water service to such person or persons.

(Ord. 1271 § 1 (part), 1991

30.64.060 - Non-Essential Water Uses.

1. The following uses are exempt from restrictions:
    A. A body of water which stores water for use in flood control, in meeting peak water demands or for purposes relating to the treatment of sewage by a political subdivision of this State:
    B. A body of water which stores water for use by the Las Vegas Valley Water District or by a water district created pursuant to NRS Chapter 318.
    C. A body of water which stores and distributes water or reclaimed wastewater for use by an irrigation district created pursuant to NRS Chapter 539.
    D. A body of water which stores water used in a mining reclamation project.

2. Swimming Pools. Swimming pools are considered to be accessory uses in all districts when not a principal use of the property. All pools (above ground and below grade) shall comply with the following:

A. Pool water line must be a minimum five (5) feet away from the front yard and shall not cross a property line.

B. All pools must be enclosed by a minimum five (5) foot high fence or wall (which may be a building wall) with self-closing and self-latching gates or doors, the latching device being located on the inside and not less than four (4) feet above the ground designed to prevent access to the pool without going through the gate. If visible from the street, then the pool must be surrounded by a decorative wall.

C. As a further precaution, it is suggested all doors and windows shall be self-closing and self-latching, and a non-climbable five-foot fence be constructed to separate the pool/spa from the residence (see Figure 30.64-16).

D. Waterfalls or other decorative features associated with a pool may encroach into a yard setback, must conform to maximum wall height, and may not cross a property line.

E. The water surface area of outdoor swimming pools shall not exceed the following:

i. Non-single family residential development, including community pools and recreational facilities shall be limited to four percent (4%) for the first ten (10) acres or less and four-tenths percent (0.4%) for the additional total development area that exceeds ten (10) acres.

ii. For a resort hotel, an additional five (5) square feet will be allowed for each guest room.

iii. Single-family residential development shall be limited to an area of 600 square feet.

3. Manmade Lakes. Manmade lakes are prohibited, except for the following:

A. A body of water constituting a wetlands project or located in a recreational facility which is owned or operated by a political subdivision of this State and that utilizes non potable water.

B. A body of water which is located in a recreational facility that is open to the public and owned or operated by the United States of America or the State of Nevada.

C. Bodies of water on a cemetery which are used for the purpose of storing irrigation water for the same and which have a combined aggregate surface area less than five and one-half percent (5.5%) of the total cemetery area, respectively.

4. Ornamental Water Features.

A. The following ornamental water features are permitted:

i. A water feature of not more than 25 square feet surface area when in conjunction with a single-family residence.

ii. Those in conjunction with a resort hotel must enter into an abatement agreement with the purveyor, if required.

iii. The following shall not be considered Ornamental Water Features:

Those that are necessary and/or functional components serving other allowable uses, including, but not limited to:

a. An interpretive feature of an educational exhibit.

b. Those within a climate-controlled structure.

B. Water features will not be required to be drained. A recirculating water pool to maintain pumps, pond liners, and ancillary equipment but only between the hours of 1:00 a.m. and 4:00 a.m. or whenever freezing conditions require system preservation, may be maintained.

5. Recreational Water Park. The water surface area of recreational water park for a single development shall be pursuant to water purveyor regulations.

(Ord. 3354 § 11 (part), 2006; Ord. 3297 § 5, 2005; Ord. 2950 § 2, 2003: Ord. 2481 § 3 (part), 2000)

(Ord. No. 3826, § 7, 11-4-2009; Ord. No. 4275, § 11, 2-18-2015; Ord. No. 4288, § 6, 4-22-2015; Ord. No. 4367, § 8, 2-3-2016; Ord. No. 4515, § 3, 9-6-2017; Ord. No. 4559, § 12, 1-3-2018; Ord. No. 4977, § 3, 8-3-2022)

Editor's note— Ord. No. 4977, § 3, adopted August 3, 2022, renamed § 30.64.060 from "water features" to "non-essential water uses."

APPENDIX 2 – CLARK COUNTY POPULATION ESTIMATES

Clark County, Nevada 2023 Population Estimates — POPULATION by PLACE

August 2023 (Re-Base)

PLACE / COMMUNITY	Population by HOUSING TYPE: Single Family	Duplex 3/4-Plex	Mobile Home	Apartments	Townhomes	Condominiums	Group Quarters	TOTAL POPULATION
CLARK COUNTY	1,502,782	57,168	58,475	458,508	118,301	159,342	21,011	**2,371,586**
Cities	899,239	37,200	15,704	231,028	69,880	73,389	8,283	**1,314,722**
Unincorporated Areas	603,542	19,968	40,771	225,480	48,421	85,953	12,728	**1,036,864**
LAS VEGAS VALLEY URBAN AREA	1,467,658	56,018	48,810	450,350	112,733	153,500	14,478	**2,303,547**
Cities	876,210	36,269	13,005	228,580	65,499	69,579	7,787	**1,296,888**
Unincorporated Areas	591,448	19,748	35,804	221,770	47,235	83,922	6,711	**1,006,659**
OUTLYING AREAS	35,123	1,150	7,665	6,158	5,567	5,842	6,533	**68,039**
Cities	23,029	930	2,699	2,468	4,381	3,811	516	**37,834**
Unincorporated Areas	12,094	220	4,966	3,690	1,187	2,031	6,017	**30,205**
CITIES								
Boulder City	9,295	523	2,252	917	749	992	295	**15,023**
Henderson	234,881	1,383	3,283	60,842	23,943	17,882	1,272	**143,486**
Las Vegas	424,173	20,875	7,245	135,825	30,842	46,407	5,313	**669,679**
Mesquite	13,734	407	447	1,651	3,631	2,819	221	**22,810**
North Las Vegas	217,157	14,012	2,477	31,893	10,714	6,289	1,182	**283,724**
UNINCORPORATED AREAS IN THE LAS VEGAS VALLEY								
Enterprise	192,028	1,530	300	28,689	9,660	12,566	151	**244,894**
Lone Mountain	19,055	11	185	0	0	0	72	**19,322**
Nellis AFB	0	0	0	0	0	0	3,874	**3,874**
Paradise	76,504	5,174	3,732	68,018	12,376	22,204	2,046	**190,052**
Sloan	25	19	40	0	0	0	0	**83**
Spring Valley	121,043	2,070	3,680	52,382	10,682	30,066	542	**220,448**
Summerlin South	26,346	0	0	4,634	1,583	1,843	0	**34,405**
Sunrise Manor	117,488	9,938	23,498	43,118	8,548	9,889	26	**210,504**
Whitney	28,496	104	1,587	10,061	3,409	2,444	0	**46,101**
Winchester	7,207	814	2,698	14,929	2,988	4,912	0	**33,547**
Urban "County Islands"	3,258	90	84	0	0	0	0	**3,431**
UNINCORPORATED OUTLYING AREAS[1]								
Blue Diamond	336	0	78	7	0	0	0	**414**
Bunkerville	782	13	134	0	0	0	0	**929**
Cal-Nev-Ari	30	0	91	0	0	0	0	**121**
Coin Creek	21	0	38	0	0	0	0	**59**
Fort Mojave Reservation	0	0	0	0	0	0	370	**370**
Goodsprings	104	12	71	0	0	0	0	**186**
Indian Springs	854	20	679	0	0	0	0	**1,554**
Jean	0	0	0	0	0	0	104	**104**
Laughlin	2,808	0	2	2,921	1,187	2,010	0	**8,927**
Lower Kyle Canyon Road	182	0	44	0	0	0	0	**227**
Moapa / Moapa Reservation	603	49	312	0	0	0	320	**1,285**
Moapa Valley - Logandale	2,689	11	379	0	0	0	0	**3,059**
Moapa Valley - Overton	1,851	96	1,122	143	0	0	0	**3,212**
Moapa Valley - Remainder	48	0	0	0	0	0	0	**48**
Mountain Springs	97	0	0	0	0	0	0	**97**
Mt. Charleston	648	3	0	0	0	21	80	**750**
Nelson	17	0	21	0	0	0	0	**38**
Primm	0	0	183	591	0	0	0	**774**
Red Rock [2]	115	0	8	0	0	0	0	**123**
Sandy Valley	820	6	780	0	0	0	0	**1,606**
Searchlight	99	3	285	28	0	0	0	**415**
Spring Mountains [3]	145	5	10	0	0	0	0	**161**
Other Outlying Areas [4]	56	0	538	0	0	0	5,143	**5,747**

Clark County Department of Comprehensive Planning

Source: Southern Nevada Consensus Housing Unit Count August - Re-Base 2023

report date: 10/23/2023

[1] Figures may be different than previous years due to changes in community boundaries.

[2] Includes all areas served by the Red Rock Citizens Advisory Council (Calico Basin, W. Blue Diamond and Rural) except the residents of Blue Diamond.

[3] Includes Cold Creek, Lee Canyon and other areas in the Spring Mountains, but not Mountain Springs or the town of Mt. Charleston.

[4] Includes Las Vegas Police Beat Lands, Boulder Basin, Cottonwood Cove, Coyote Springs, Las Vegas Wash, & other outlying areas.

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