

# Appendix F

## Canyon General Improvement District Source Water Protection Plan

*Contact Canyon General Improvement District for review.*



## Executive Summary

A Wellhead Protection Plan (WHPP) for the Canyon General Improvement District (CGID) was completed on December 29, 2004, by Farr West Engineering and was approved by the Nevada Division of Environmental Protection (NDEP). In October 2021, the CGID requested a review of the Wellhead Protection Areas in the original WHPP and related data to assist the Nevada Rural Water Association (NvRWA) in updating the CGID's WHPP. In June 2023, revisions to CGID's WHPP were completed, which included updated pumping information for CPW-2 and revised capture zone modeling. A full description of the 2023 updates to the WHPP is provided in the Capture Zone Report (Attachment A, CGID Plan).

The original WHPP from 2004 was developed under the State of Nevada's "Comprehensive State Ground Water Protection Program" (updated in March 1998) and was part of what was known as the State Wellhead Protection Program. Since March 2010, significant modifications have been made to the State Wellhead Protection Program, leading to the development of the Integrated Source Water Protection Program (ISWPP). The ISWPP expands upon the original State Wellhead Protection Program by integrating the protection of both groundwater and surface water sources. It also includes coordination with existing protection programs, such as the original WHPP from 2004.

In 2024, CGID participated in the development of a Storey County Community Source Water Protection Plan (County-Wide Plan), that included participation in a Storey County Source Water Protection Local Planning Team (Team). Through the county-wide source water protection planning efforts, significant modifications were made to CGID's source water protection planning document. An individual CGID Source Water Protection Plan (CGID Plan) was developed to exist within the larger framework of the County-Wide Plan, as well as individual plans for each public water system in Storey County. The following CGID Plan is intended to address the unique desires of the Lockwood community and to specifically address source water protection for CGID's drinking water sources.

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## Attachments

- Attachment A CGID Capture Zone Report\*
- Attachment B CGID Potential Contaminant Source Inventory\*

*\*Contains Sensitive Information*

*Contact Canyon General Improvement District for review.*

## Acronyms & Abbreviations

Acronym/ Abbreviation	Definition
bgl	below ground level
BSDW	Bureau of Safe Drinking Water
CGID	Canyon General Improvement District
County-Wide Plan	Storey County Community Source Water Protection Plan
EPA	Federal Environmental Protection Agency
FEMA	Federal Emergency Management Agency
ISWPP	Integrated Source Water Protection Program
NvRWA	Nevada Rural Water Association
NDEP	Nevada Division of Environmental Protection
NDWR	Nevada Division of Water Resources
PCSs	potential contaminant sources
SWPAs	source water protection areas
Team	Storey County Source Water Protection Local Planning Team
USGS	United States Geological Survey
WHPP	Wellhead Protection Plan

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# 1.0 Introduction

## 1.1 Source Water Protection

The Safe Drinking Water Act mandates that each state implements a program to protect the water quality of all drinking water sources through a "multi-barrier approach." This approach considers all potential threats to water sources and establishes plans to mitigate or eliminate their impacts. The sources of drinking water, referred to as "source water," include both surface water (rivers, streams, lakes, and reservoirs) and groundwater (springs and aquifers). The guiding principle behind "source water protection" is the acknowledgment that the cost of cleaning up contamination significantly exceeds the cost of preventing it.

The Integrated Source Water Protection Program (ISWPP) is funded by the Federal Environmental Protection Agency (EPA) and administered by the Nevada Division of Environmental Protection (NDEP), specifically within the Bureau of Safe Drinking Water (BSDW). The State advocates for the belief that an effective source water protection plan is best developed and managed at the local level.

## 1.2 Plan Purpose and Goals

This Canyon General Improvement District (CGID) Source Water Protection Plan serves as an active tool to be utilized by CGID for the coordinated protection of their public drinking water resources. Operated voluntarily under local jurisdiction and control, this CGID Plan utilizes guidance and criteria from both the U.S. Environmental Protection Agency and the NDEP to seek State endorsement. Once endorsed by NDEP, utilities may additionally benefit from State funding and assistance. Some of the variety of benefits include support for source water protection implementation, contaminant source management, assistance to address emerging contaminants, and the development of public education materials.

The CGID is a participating member of the Storey County Source Water Protection Local Planning Team (Team) and has assisted with the development of the Storey County Community Source Water Protection Plan (County-Wide Plan) Goals. Table 1 provides additional goals, established by CGID that are more specific to the needs of the Lockwood community.

**Table 1. CGID Source Water Protection Plan Goals and Implementation Approach**

CGID Plan Goals	Roles
<b>Goal 1</b> – Provide a single reference and guide for protecting drinking water resources.	Participate in a county-wide planning effort to protect source water.
<b>Goal 2</b> – Identify and evaluate threats to drinking water resources.	Delineate Source Water Protection Areas and maintain an inventory of potential contaminant sources.
<b>Goal 3</b> – Provide management tools to address potential sources of contamination.	Identify management strategies and actions that address potential contaminant source.
<b>Goal 4</b> – Provide ongoing protection for current and future drinking water resources.	Maintain an active record of activities that assist source water protection.
<b>Goal 5</b> – Provide documentation to support proposed monitoring waivers.	Involve the Lockwood community through public activities, information, and education regarding source water protection topics.

### 1.3 Description of Planning Areas

The CGID is a small, community public water system, defined by the Nevada Revised Statutes (NRS) 445A.235 as “a system, regardless of ownership, which provides the public with water for human consumption through pipes or other constructed conveyances, if the system has 15 or more service connections, as defined in NRS 445A.843, or regularly services 25 or more persons.”

CGID serves the Lockwood community, which is situated along the Truckee River at the northwest boundary of Storey County (Figure 1). Lockwood is less than 5 miles downstream on the Truckee River from the Reno-Sparks metropolitan area. Bisecting the Lockwood community is Long Valley Creek, which originates south of Lockwood near the Virginia Highlands and empties into the Truckee River. Lockwood is bordered by Washoe County to the north and west, the Virginia Highlands to the south, and the Tahoe-Reno Industrial Center to the east.

### 1.4 Canyon GID Local Contacts

A successful source water protection plan requires the participation and support of all jurisdictional authorities that affect land use practices in or around the designated Source Water Protection Areas (SWPAs). These entities may be participating members of the Team and involved in source water protection planning and implementation across the county and for other public water systems.

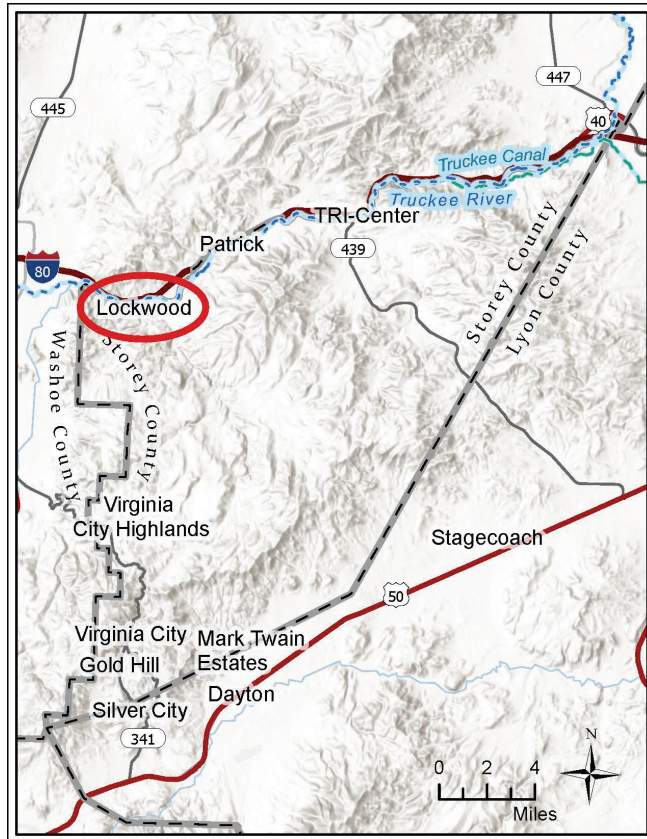


Figure 1. Location Map

Due to the active and ongoing nature of the ISWPP, the local contact and membership of the Team is expected to change over time. Table 2 lists the current local contact information of individuals participating in source water protection in the Lockwood community. Included in the table are the identities, contact information, and corresponding roles and responsibilities of each individual.

**Table 2. Canyon General Improvement District Local Contact Information**

Name/Position	Organization	Contact Information	Source Water Protection Role
Mitch Andreini <i>Water System General Manager</i>	Canyon General Improvement District	800 Peri Ranch Rd., Ste. 103 Sparks, NV 89434  (775) 342-2850 <a href="mailto:canyongid@att.net">canyongid@att.net</a>	Implementation of, and updates to, the CGID Plan. Coordinating member of the County-Wide Source Water Protection Local Planning Team.
Dave Hart <i>Chairman of the Board</i>	Canyon General Improvement District Water Board	225 Rue de la Divoire Sparks, NV 89434  (775) 342-2850 <a href="mailto:canyongid@att.net">canyongid@att.net</a>	Provide input and assistance with public education and CGID Plan implementation.
Austin Osborne <i>Manager</i>	Storey County	26 South B Street P.O. Box 176 Virginia City, NV 89440  (775) 847-0968 <a href="mailto:aosborne@storeycounty.org">aosborne@storeycounty.org</a>	Provide county level planning, input, and support for source water protection.
Kathy Canfield <i>Planning Manager</i>	Storey County	Storey County Courthouse 26 South B Street Virginia City, NV 89440  (775) 847-1144 <a href="mailto:kcanfield@storeycounty.org">kcanfield@storeycounty.org</a>	Provide county level planning, input, and support for source water protection.
Ethan Mason <i>ISWPP Coordinator</i>	NDEP, Bureau of Safe Drinking Water – Integrated Source Water Protection Program	901 S. Stewart Street, Ste. 4001 Carson City, NV 89701  (775) 687-9311 <a href="mailto:e.mason@ndep.nv.gov">e.mason@ndep.nv.gov</a>	Guidance and assistance with funding and implementation of source water protection measures.
Jill Sutherland, PE Alison Cramer, EIT Erin Smith <i>ISWPP Technical Assistance</i>	Resource Concepts, Inc.	340 N. Minnesota Street Carson City, NV 89703  (775) 883-1600 <a href="mailto:jill@rci-nv.com">jill@rci-nv.com</a> <a href="mailto:alison@rci-nv.com">alison@rci-nv.com</a> <a href="mailto:erin@rci-nv.com">erin@rci-nv.com</a>	Provide assistance on behalf of NDEP to implement source water protection measures.

## 2.0 Source Water Protection Area Delineation

### 2.1 Source Water Description

CGID’s drinking water comes from groundwater sources. These include four production wells: two wells, L02 (West) and L03 (East), are inactive, and W01 and W02 (CPW-2) have an active status. However, well CPW-2 is used as the primary water supply source for the community. A fifth well, the Peri Brothers Ranch well, had been a supply for the mobile home park, but has since been disconnected from the distribution system. Design details of the four wells connected to the CGID system are provided in Table 3, copies of the well driller’s reports may be found in Attachment A of this CGID Plan.

**Table 3. Canyon GID Drinking Water Well Sources**

Well Name or Designation	W01	W02 (CPW-2) Primary Source <sup>1/</sup>	L02 (West well)	L03 (East well)
Date Drilled	January, 1986	April, 2003	March, 1997	December, 1981
Aquifer Type	Semi-confined	Confined	Unconfined	Unconfined
Well Status	Active	Active	Inactive	Inactive
Total Depth (Sanitary seal depth) (ft.)	143 (102)	920 (100)	160 <sup>2/</sup> (52)	150 <sup>2/</sup> (52)
Wellhead Elevation <sup>1/</sup> (approx. ft.)	4345	4340	4370	4370
Depth to Static Water (ft.)	20	15.8	28	29
Casing, Outside Diameter at surface (approx. in.)	8 5/8	20	8 5/8	10 3/4
Combined Screened Interval Depth bgl (Cumulative ft. within interval)	123 to 143 (20)	102.47 to 482.91 (380.44)	59 to 159 (100)	80 to 150 (70)
Modeled Pumping Rate (gpm)	120	600	30	70
Driller of Record	Paul Williams & Sons	Lang Exploratory Drilling	McKay Drilling Inc.	Wayne Drilling Inc.

<sup>1/</sup> Extrapolated from USGS topographic map

<sup>2/</sup> Waiver number-338 See Attachment A

#### 2.1.1 New Sources of Drinking Water

Currently, CGID does not have any plans to develop new sources of drinking water. If needed, a new well might be located on land already owned by CGID. In the event that CGID develops or acquires a new public water supply well, the proposed well(s) should consider the source water protection goals described in this CGID Plan as well as those established in the County-Wide Plan. In addition, the contingency plan will be modified to include new wells. Management practices being implemented at existing wells may be utilized for new wells or modified where appropriate.

All new water wells and related drilling are regulated by the Nevada Division of Water Resources (NDWR) as specified in the Nevada Administrative Code (NAC) 534.010-500. A notice of intent to drill must be filed with the NDWR prior to drilling. In addition, a permit must be obtained to drill or replace a water well within a water basin designated by the State Engineer.

## 2.2 Capture Zone Calculations

Capture zones are important for delineating and visualizing the portion of an aquifer that contributes water to a well within a certain period of time. In the 2004 CGID WHPP, the US EPA's WhAEM2000 (Wellhead Analytic Element Model, version 3.1.1) computer model was used to estimate the 2-, 5-, and 10-year time-of-travel for a contaminant to reach a well. The time-of-travel capture zones represent the average time that particles of water are expected to travel in the aquifer from a given point to a constantly pumping well. The model approach was reviewed in 2023 as part of the update, because assumptions approved in the original approach appeared to be reasonable, no conceptual changes were made to the capture zone calculation.

It is important to note that the application of the WhAEM2000 computer model represents the conceptual analysis of local groundwater hydrology and is not intended to "simulate" the more complex dynamics of an aquifer. Detailed model development and capture zone maps are contained in the Capture Zone Report found in Attachment A of this CGID Plan.

### 2.2.1 Methods

The aquifer modeling program WhAEM200 focuses on three important sets of data for estimating capture zones: 1) groundwater gradients, 2) magnitude (hydraulic conductivity or transmissivity) and 3) direction of groundwater flow (*Working with WhAEM*, EPA/600/R-00/022). Several calculation methods may be employed, these include fixed and calculated fixed radius methods, uniform flow solutions, and geohydrologic modeling, also referred to as the analytic element method.

Other considerations include the fact that actual well production flow rates vary seasonally and by location. Additionally, numerous physical and geologic factors may affect the rate of contaminant movement. Factors that are not addressed in the model and assumed to be negligible or conservatively addressed include:

- 1) *Retardation* (inhibition of contaminant flow by adsorption to porous medium or other particles)
- 2) *Diffusion* (influence of molecular or ionic concentration gradients)
- 3) *Dispersion* (mechanical lateral distribution of a contaminant plume)
- 4) *Fracture Flow*
- 5) *Heterogeneous* (distribution of porosity or hydraulic conductivity)
- 6) *Flow Barriers* (such as faults)

### 2.2.2 Results

Modeling results identified three separate well fields, that include the 2-, 5-, and 10-year time-of-travel capture zones, covering an area of approximately 127 acres. The specific well and aquifer data used in the WhAEM2000 modeling is provided in Table 4 and includes updated information regarding the 2023 Revised WHPP. A detailed description of each wellfield’s capture zone modeling and final capture zone maps is provided in Attachment A of this CGID Plan.

**Table 4. WhAEM2000 Data Entry Values for CGID Capture Zone Models**

Parameters	W01 Well	Lockwood Wells (West & East)	W02 (CPW-2) Well (2023 Revised WHPP)
Transmissivity (ft <sup>2</sup> /day)	401	401 & 8,500	2,674
Hydraulic Conductivity (ft/day)	20.1	4.96 & 100	3.57
Porosity (dimensionless)	0.25 <sup>1/</sup>	0.25 <sup>1/</sup>	0.25 <sup>1/</sup>
Pump Rate (ft <sup>3</sup> /day)	23,100	5,775 & 13,475	28,875 <b>(115,500)</b>
Aquifer Base Elevations (feet)	4,155	4,155	3,420
Aquifer thickness (feet)	123 <sup>1/</sup>	150 <sup>1/</sup>	750 <sup>1/</sup> <b>(380)</b>

<sup>1/</sup> Values estimated from driller’s well logs and profile information, (See Attachment A).

The lack of consistent and adequate data regarding the aquifers in the study area further justifies the conservative modeling approach. Final modeling represents pump rates under year-round production with no appreciable recharge from precipitation added to the model, this is due to the arid nature of the region. The average annual precipitation is about 8 to 12 inches (USDA, 1983). Recharge for the area is from upgradient watersheds in the Virginia and Pah Rah Mountain Ranges and from the Truckee Meadows.

There is insufficient data to determine the extent of any hydraulic connection between the river and the aquifer supporting W01. However, three factors suggest this connection is probably limited (leaky aquitard). High metals content (i.e., iron, magnesium, and arsenic), well log lithology and limited production potentials as measured by Nimbus Engineering indicate that the well is not directly connected to the Truckee River (Nimbus and Farr West Engineering, December 2004). Also, United States Geological Survey (USGS) gage data for this reach of the river (Vista to Tracy) reflects an increasing stream flow or a gaining reach (USGS tables, 2004). For these reasons, this aquifer is believed to be semi-confined.

Capture zone maps for CGID drinking water wells, both active and inactive, are available in Attachment A of this CGID Plan.

## 2.3 Potential Contaminant Source Inventory and Evaluation

The identification of potential contaminant sources (PCSs) in the vicinity of existing wells is a critical component of this program. An accurate knowledge of the potential threats to groundwater quality will allow CGID to create the best plan to protect their drinking water resources. There are many types of human activities that have the potential to release contaminants into the environment which can travel to a drinking water source. An inventory of PCSs was developed for the CGID and greater Lockwood area in order to assist the Team in developing SWPAs and management strategies.

The Nevada Bureau of Safe Drinking Water has conducted Vulnerability Assessments for CGID drinking water sources (August 2018); these materials, provided by NDEP, were used as a starting point for the PCS investigation. Additionally, State and Federal databases were queried and mapped using GIS, then reviewed by CGID. A windshield survey of the area was conducted in January 2022 and again in September 2023, to further investigate possible PCSs that were not identified in the various digital databases; a summary of these results is available in the Potential Contaminant Source Inventory (Attachment B, CGID Plan).

The PCS inventory should be updated every five years or with significant changes to the PCSs in the Lockwood community or surrounding area. The completion of this review will be implemented by the Manager of CGID and coordinated with the Team.

### 2.3.1 Source Water Protection Priorities

There are several PCS categories within the designated SWPAs that are of concern to CGID, these include:

#### ***Transportation/Utilities Corridor***

The proximity of Lockwood to the Truckee River, and to the transportation corridor containing U.S. Interstate 80 and the Union Pacific Railroad, presents some unique challenges, especially regarding contingency planning. The capture zones for well (W01) and primary well (CPW-2) are closely bordered to the north by a petroleum pipeline operated by Kinder Morgan; efforts should be made to contact Kinder Morgan to facilitate communications in the event of an emergency. Notification to Storey and Washoe Counties, the Nevada Department of Transportation, the Union Pacific Railroad, and utility providers, is also recommended. This notification should include information about the locations of CGID's Source Water Protection Areas. In addition, CGID should request immediate notification of any spills that may affect CGID's SWPAs.

#### ***Private Wells***

There is historical evidence of private well development in the area. Even small wells, if improperly installed, maintained, or abandoned, can become a direct route for surface contamination to enter an aquifer. It is recommended that the office of the State Engineer and the Nevada Bureau of Safe Drinking Water be contacted with any suspected issues. CGID should request assistance to review the status of unsealed wells within or near CGID's capture zones, to assess whether any hazards exist and to ensure that all wells are properly abandoned.

#### ***Wastewater Treatment Operations***

Operation of CGID's small-scale wastewater treatment plant, approximately 50 feet from the primary well, increases the risk of groundwater contamination via the wells themselves. An effluent leach

field and associated monitoring wellfield represent additional PCSs if poorly maintained. Potassium permanganate, manganese greensand, and chlorine (Sodium Hypochlorite Solution) are present on site in significant quantities. All these substances can cause substantial harm if improperly managed.

#### ***Flood-Prone Areas and Upstream Uses***

Additionally, the Federal Emergency Management Agency (FEMA) 100-year flood zone maps of Long Valley Creek and the Truckee River impact portions of the SWPAs for all wells in the Lockwood area. Historical flooding and flash-flooding has impacted the Lockwood community, causing mudslides, damaging infrastructure and homes, impacting water quality, and threatening source water. Flooding is a serious concern; the Lockwood community should expect and prepare for future flood events. A map of the FEMA 100-year flood zone is provided in Attachment B of this CGID Plan.

Upstream of both Long Valley Creek and the Truckee River are numerous operations that may have a potential impact on the CGID wells that are located downgradient. These uses include historic mining and the Lockwood Landfill, which are both located within the Long Valley Creek drainage area. Approximately three miles upstream of Lockwood on the Truckee River is the Truckee Meadows Water Reclamation Facility which treats wastewater throughout the Truckee Meadows, depositing the treated effluent into the Truckee River.

#### ***Emerging Contaminants***

To address new drinking water requirements for emerging contaminants, CGID will likely require ongoing infrastructure improvements as well as evolving public outreach and education. Many aspects of emerging contaminants are not fully understood, such as transport, new forms of treatment, and sources; as these become more well known, CGID's needs may change.

### ***2.3.2 Watershed Discussion***

Integrated source water protection identifies belowground and aboveground components to source water protection planning (i.e., geologic, hydrogeologic, and watershed information) (NDEP ISWPP, 2010). Since 2014, the approach to source water protection incorporates watershed considerations when developing SWPAs. The watersheds of greatest influence on the CGID, Lockwood community, and source water resources are the Lower Long Valley Creek watershed (HUC 12 ID: 160501020603) and the western portion of the Giants Throne Canyon-Truckee River watershed (HUC 12 ID: 160501020607).

Long Valley Creek drains from mountains in the Virginia Range in the southern portion of Storey County, north through Lagomarsino Canyon, through the Lockwood and Rainbow Bend housing development, to empty into the Truckee River, encompassing 19,933 acres of Storey County. Lockwood and Rainbow Bend are located near the confluence of Long Valley Creek and the Truckee River, approximately 6 miles east of Sparks, Nevada.

The western portion of the Giants Throne Canyon-Truckee River watershed, upstream of the Lockwood community, captures runoff from the US Highway 80 corridor and crosses into the eastern boundary of Washoe County. The Truckee River conveys water and potentially any contaminants directly past the Lockwood community, crossing through designated SWPAs.

Portions of Lockwood and Rainbow Bend community are located within the 100-year flood zone designated by the FEMA. Additionally, this flood zone area overlaps with the SWPAs demarcated in

this report; a map is provided in Attachment B of this CGID Plan. The Storey County Hazard Mitigation Plan (2020) acknowledges several historic flood events in and around Lockwood that resulted in damage to several bridges and property and recognizes a likely potential for repeat flood events in the future.

Movement of materials by overland flow poses a potential threat to source water quality and drinking water infrastructure when large quantities of sediment become mobilized during flood events causing destructive down-gradient mudslides, erosion, and sediment deposition. Additionally, hazardous materials within a watershed can infiltrate into the subsoil, potentially leaching into aquifers used for drinking water supply.

A Comprehensive Flood Control Plan (2011), developed for Storey County by Farr West Engineering, identifies frequent flooding in the greater Lockwood area primarily attributed to flooding of the Truckee River causing backwatering into Long Valley Creek. The flooding often results from abnormally high temperatures and/or heavy rain events causing accelerated snowmelt. Provided in the 2011 Comprehensive Flood Control Plan are recommendations for county-wide improvements to mitigate flood risk. The Board of County Commissioners approved the Long Valley Creek Flood Hazard Mitigation Plan prepared by JUB Engineering in March 2024. This effort identifies risks for flooding of Long Valley Creek, to evaluate the costs and benefits of mitigation efforts, and establish future efforts and avenues for grant funding.

### *2.3.3 Management Strategies*

Several management strategies were developed by the Team that were the results of the PCS inventory, specific Lockwood community needs, and the goals of the CGID Plan and County-Wide Plan. These management strategies are used as a foundation of the Action Plan for CGID, which addresses source water protection concerns specific to CGID and the Lockwood community, see Section 3.1 of this CGID Plan, and Appendix B of the County-Wide Plan.

#### **Storey County Source Water Protection Management Strategies**

##### ***Planning and Coordination***

Integrated source water protection means using the existing county and local planning framework as a foundation for enhancing development standards and policies to recognize source water protection planning. CGID is an integral part of the Team and a participant in the County-Wide Plan. Effective communication between policy makers, public water systems, and the public is crucial for promoting source water protection awareness and the successful implementation of source water protection measures.

##### ***Spill Response and Cleanup***

The Lockwood community is located in a unique physical setting at the intersection of two canyons (i.e., the Lagomarsino Canyon and the Tracy segment of the Truckee River corridor), next to U.S. Highway 80, the Union Pacific Railroad, the Truckee River, and Long Valley Creek. Planning and coordination for spill response and reporting within the highly active transportation corridor surrounding the Lockwood community and CGID's SWPAs is of great importance.

### **Physical Improvements**

Ongoing water system infrastructure improvements are necessary to continue providing the Lockwood community with clean drinking water. Additional improvements within the floodplain and Source Water Protection Areas are needed as preventative measures to safeguard drinking water sources.

### **Education and Outreach**

CGID is committed to keeping their community members updated with all important drinking water information. In order to have these ongoing discussions, it is important to provide the Lockwood community with relevant educational materials on key topics such as household hazardous waste, private well maintenance, potential sources of contamination, flood awareness, and emerging contaminants.

### **Emerging Contaminants**

It is the responsibility of CGID to provide clean and safe drinking water to the community. In order to meet the most current drinking water requirements, it is important to address the issues surrounding emerging contaminants, which include contaminant sources, coordination, treatment, and education. CGID is committed to providing safe and sustainable drinking water for all residents and businesses within the Lockwood community.

## **2.4 Source Water Protection Area Description**

The final Source Water Protection Areas (SWPAs) for CGID were delineated using a combination of WhAEM2000 geohydrologic modeling for steady pumping wells and calculated fixed radius, and upgradient watershed area. The SWPAs represent the land surface overlying that portion of the aquifer(s) from which a well is expected to draw water within a specified ten-year period. Delineations are purposely conservative and intended to assist the utility in 1) prioritizing risks to water quality from potential sources of contamination, 2) responding appropriately to events such as accidental spills of hazardous chemicals, and 3) developing land use strategies for the community as adjacent properties develop.

Two types of management areas were developed for source water protection for CGID and the Lockwood community:

- 1) **Source Water Protection Areas** represent the 10-year time-of-travel modeled capture zone surrounding each active and inactive CGID wellhead.
- 2) **Areas of Interest** include two HUC-12 watershed areas upgradient of the Lockwood community. The Lower Long Valley Creek watershed and a western portion of the Giants Throne Canyon-Truckee River watershed above the CGID SWPAs.

The mapped SWPAs for CGID and Lockwood community are found in Appendix A – SWPA Maps of the County-Wide Plan and in Attachment B of this CGID Plan.

## 2.5 Contingency Measures

Contingency planning means being prepared to act in response to a threat to the quality or quantity of CGID’s drinking water supply. Contingency planning considers factors such as the time frames required for a public water system to transition to an alternative water source, the quantity and quality of available alternate water sources, and the utilization of local resources.

In addition to the Contingency Plan, there may be several other plans in existence that provide useful information relative to drinking water supply and protection. Copies of these documents may be on file in the CGID Office. During an emergency water supply event or suspected event, notification should follow an established chain of command, provided in Table 5.

**Table 5. Spill and Emergency Chain-of-Command**

Organization	Contact Person	Work Phone	Other Phone
CGID	General Manager	(775) 342-2850	--
Storey County	Dispatch	(775) 847-0950	911
Storey County	Sheriff	(775) 847-0959	911
Northern Nevada Public Health	Main Number	(775) 328-2300	(775) 328-2434 Environmental Health Services  After Hours: (775) 328-2436
Nevada Division of Environmental Protection	Main Number	(775) 687-4670 Carson City Office	(775) 687-9368 Bureau of Corrective Actions

### 2.5.1 Contingency Measures for Drinking Water Sources

Contingency measures may encompass a range of actions designed to address different scenarios, but first an assessment of the water supply problem should be performed. Solutions may vary depending on the type and extent of the problem and may include an alternate supply of water – these alternative sources should be considered prior to an emergency. Following any changes in service, notification to residents and regulatory officials should be made as soon as possible. In some cases, Northern Nevada Public Health may require notification as well.

#### **Water Conservation Plan**

Water meters have been installed by the CGID to encourage water conservation, as well as manage supply. The Canyon General Improvement District Water Conservation Plan (August 2024) also provides for enforcement measures.

#### **Emergency Water Supply Options**

Emergency water supply options are not meant to be long-term solutions to supply shortages. They merely provide relief until a permanent solution can be found. The following is a list of alternative supply options for public drinking water:

- **Boiled Water:** Boiled water may be ordered at the discretion of the Manager of CGID or as directed by Northern Nevada Public Health.

- **Bottled Water:** Available in the immediate area at local stores. Potable water could also be trucked in from Reno or Sparks.
- **Water Rationing:** In the event that demand cannot be met, rationing orders may be given by CGID.
- **Backup Generators:** In the event of an extended power failure in the Lockwood area, CGID has backup generators for at least one well (CPW-2).

**Water Supply Contamination**

In the event of a contamination incident affecting the public water system, the appropriate course(s) of action will be determined. The nature of the contaminant will dictate specific actions. Contingency Measures and Emergency Water Supply Options will be evaluated and implemented until remedial action can be taken.

**Emergency Response**

In the event of an emergency, the Quick Contact Sheet on the following page should be used to involve the proper authorities. The community is fortunate to be served by a fire station. Fire station personnel are trained first responders.

**Restoration of Services**

In the event of a contamination incident, the appropriate course of action will be determined. The nature of the contaminant will dictate specific actions. Upon successful completion of remedial activities, water service will be restored to the community as soon as possible.

**Table 6. Quick Contact Sheet**

Organization	Contact Person	Phone	Other Phone
Union Pacific Railroad	Response Management Communication Center	(888) 877-7267	--
Kinder Morgan Pipeline	Emergency Contact Numbers 24/7	(866) 762-8442	(713) 369-9000 Corporate Headquarters
Nevada Department of Transportation	24/7 Hotline – Report an Illicit Discharge	(888) 331-6337	(775) 888-7000 Main Number
Nevada State Police Highway Patrol	Dispatch	(775) 687-0400	911
Lockwood Landfill	Main Number	(775) 342-0401	--
CGID	Mitch Andreini	(775) 342-2850	--
Lockwood Community Center	Edna Cudworth	(775) 342-0829	(775) 342-6001
Storey County	Dispatch/Sheriff’s Office	(775) 847-0950	911
Northern Nevada Public Health	Reno, Sparks, and Washoe County	(775) 328-2434	911
City of Sparks	Environmental Control	(775) 691-9227	--
Northern Nevada Public Health	Main Number	(775) 328-2003	(775) 328-2434 Environmental Health Services  After Hours: (775) 328-2436
Nevada Division of Emergency Management/Homeland Security	Duty Officer 24/7 Emergency Line	(775) 687-0498	(775) 687-0300 Main Line (Mon.-Fri. 8AM-5PM)

## 3.0 Plan Implementation

### 3.1 Action Plan

The Action Plan for CGID is included in Appendix B - Action Plans of the County-Wide Plan and was developed by CGID to support the protection of the Lockwood community's drinking water sources. The Action Plan includes specific action items that should be accomplished in order to meet the objectives of the CGID Plan. It considers a multitude of local and regional factors such as land use, future development, hazard mitigation and planning, regional collaboration, and public education and outreach.

Each action item includes the following elements:

- 1) Management Strategy – Describes the approach for implementing the action item.
- 2) Action Description – Provides a detailed description of the action item.
- 3) Priority – Assigns a level of relative importance to each action item.
- 4) Project Partners – Identifies the stakeholders and organizations involved in implementing each action item.
- 5) Type of Assistance Needed – Specifies the type of support or assistance needed to carry out the action item (i.e., technical expertise, funding, or other resources).

The CGID Plan is intended to be a dynamic, “living” document that should change and adapt with the needs of the public water system and Lockwood community. Regular updates to the CGID Plan will be coordinated with the update of the County-Wide Plan. The Team has agreed to meet annually to revisit the plan, assess the need for updates, and follow up on the Action Plan implementation.

For technical assistance with plan updates and implementation of the Action Plan, contact the NDEP, Bureau of Safe Drinking Water, Integrated Source Water Protection Coordinator at (775) 687-9503.

### 3.2 Public Education and Participation

The primary goal regarding public education and participation is to raise the awareness of local citizens to wellhead protection issues and enlist their support and involvement. The ISWPP emphasizes a voluntary, community-based approach that actively involves the public to promote community awareness, education, and collaboration in source water protection efforts across the Lockwood community.

#### 3.2.1 Stakeholder Participation

During the development of the County-Wide Plan, presentations were made to public water systems and the County Board of Commissioners to bring awareness to source water protection. Additionally, regular meetings were held with the county-wide source water protection Team throughout the development process of the County-Wide Plan and the CGID Plan. Meeting notes, agendas, and other presentation materials are included in Appendix D – Meeting Notes of the County-Wide Plan.

### *3.2.2 Source Water Protection Education Strategy*

Public education and outreach are vital to achieving the goals of this CGID Plan. The Education and Outreach Management Strategy was developed by the county-wide source water protection Team to promote both local and county-wide awareness about the protection of drinking water sources through action items described in the CGID Action Plan (Appendix B, County-Wide Plan).

The Public Education and Outreach Plan is provided in Appendix C of the County-Wide Plan and includes various messages that highlight the importance of source water protection, actions that community members can take to help, and informational pamphlets and other materials that can be distributed to the public.

The following tasks will be completed in an effort to enlighten the public and encourage participation:

- The County-Wide Plan and incorporated Canyon General Improvement District Source Water Protection Plan will be presented to the CGID Board prior to State endorsement.
- Flyers may be sent to customers providing information on various topics, such as household hazardous wastes, emerging contaminants, proper maintenance of private wells, and flood hazard awareness.
- Source water protection messages will be developed and included in water billings.

## 4.0 References

- DOWL Engineering. (March 2024) *Canyon General Improvement District Water Conservation Plan*.
- Lumos and Associates, Inc. (October 2000) Preliminary Engineering Report for Canyon General Improvement District Water Systems.
- Nevada Division of Environmental Protection, Bureau of Safe Drinking Water, 2018 Vulnerability Assessment Program (VAP) Public Water System Report.
- Nimbus Engineers. (December 2002) *Letter on Groundwater Assessment Survey*.
- Nimbus Engineers. (May 2003) *Letter on CGID Backup Water System Permit*.
- Office of the State Engineer. (October 2004) *Well Driller's Log- General Report*.
- Resource Concepts, Inc. (January 18, 2022) *Memorandum on Update to WHPP*.
- State of Nevada Division of Environmental Protection, Bureau of Water Pollution Control (January 2002) Nevada Integrated Source Water Protection Program.
- State of Nevada Division of Environmental Protection, Bureau of Water Pollution Control (March 2010). Nevada Integrated Source Water Protection Program.
- Storey County Comprehensive Flood Control Plan (2011). Farr West Engineering.
- Storey County Hazard Mitigation Plan (2020).
- USEPA (2018). Wellhead Analytical Element Model (WhAEM Version 3.3.2) [Computer Software].
- USEPA Washington D.C. (April 2000) (Pub# EPA/600/R-00/002), Working with WhAEM2000.
- USEPA Washington D.C. (June 2018) (Pub# EPA/600/B-1/089), Working with WhAEM2000.
- USEPA Washington, D.C. (April 1989) (Pub# EPA/440/6-89-002), Wellhead Protection Programs: Tools for Local Governments.