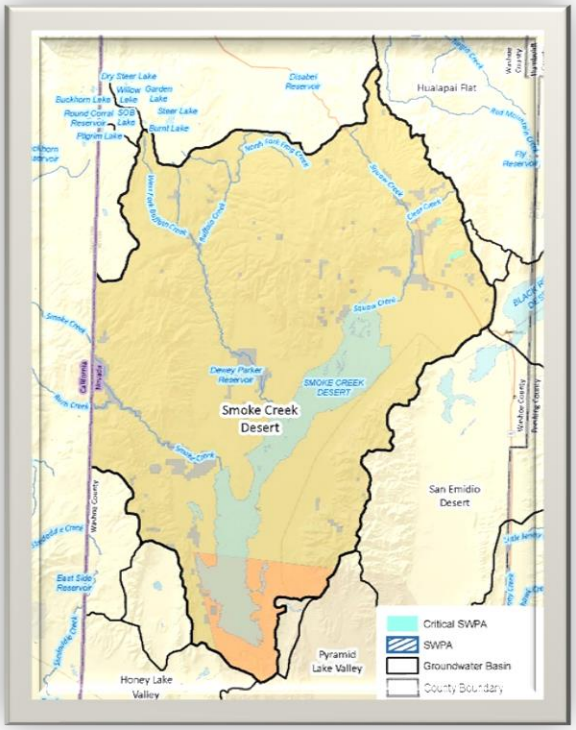
Smoke Creek Desert

Groundwater Basin #021, Source Water Profile

Click here for the SWPA Map



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Introduction

The Smoke Creek source water profile is a component of the 2020 Integrated Source Water and 319(h) Watershed Protection Plan for Public Water Systems and the Truckee River in the Truckee Meadows (Plan). This document is a part of the on-line source water mapping tool.

This Source Water Protection Area (SWPA) description is intended to be a guide and resource for organizations working within the basin, and an educational tool for those interested in learning more about the drinking water source in the area where they live. This Plan can be used to support funding for water quality projects in the basin.

Summary

This profile focuses on protecting water quality for the sources of drinking water serving the Gerlach community. There are no surface waters used directly by water systems in this basin. This profile includes potential and existing water quality concerns, types of land uses, management strategies and projects, and the involved stakeholders and their corresponding plans with water quality components.

The Smoke Creek Desert basin is a northeast trending hydrographic area of 980 square miles, and bounded by unnamed hills to the west, the Fox Range to the east and the Granite Range to the north. The mountains on the east and west sides of the area are composed mostly of volcanic rocks and are granitic rocks of the Granite Range to the northeast. Lowlands of the area are underlain by playa deposits and alluvial fans along basin margins. Water sources are located along the contact between alluvial fan deposits and granitic rocks of the Granite Range, probably along the range-front fault. Water discharging at the springs originates as high-altitude recharge in the Granite Range. The water moves westward through fractured granitic rocks along a gradient that probably is similar to the slope of land surface.

The only sources of public water supply in the Smoke Creek Desert are two springs in the Granite Range. Each spring is located within a HUC-12 Watershed which flows from the west side of the Granite Range: the Dry Creek-Frontal Smoke Creek Desert and the Lower Squaw Creek HUC-12. The springs are operated by one public water system, the Gerlach General Improvement District (GID). The land at both spring collection areas is owned by the Gerlach GID. The SWPAs include a mix of parcels owned by three

entities: the Gerlach GID, a private owner, and the Bureau of Land Management (BLM). SWPAs were developed county-wide by stakeholders to help protect drinking water sources. There are no municipal supply wells in this basin. The two springs in the northeast corner of the basin are the only sources of drinking water.

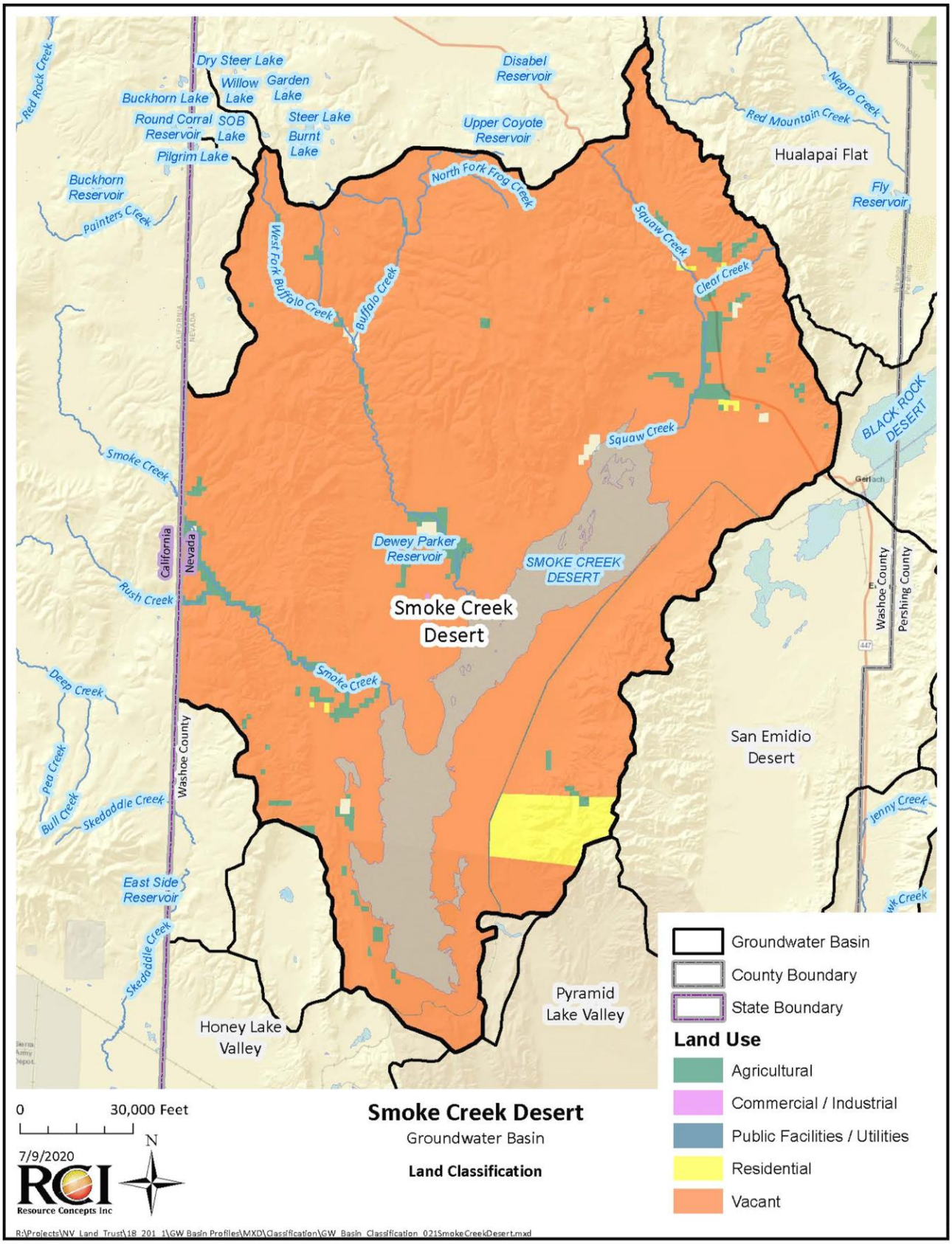
The following table summarizes key water quality aspects of this basin.

Basin Summary	
Basins	• Groundwater Basins: Smoke Creek Desert #021 • HUC-12 Watershed: Dry Creek-Frontal Smoke Creek Desert #160402030603 Lower Squaw Creek #160402030704
Source Water Protection Areas	• A SWPA provides a buffer around natural springs, and it represents a precautionary indicator to safeguard the drinking water sources. • Two springs are managed by one public water system that provides drinking water to the town of Gerlach. The Gerlach GID serves 180 people. • 403 acres make up the SWPA in this basin.
Special Considerations & Issues	• No surface waters or wells are used for public water supply. • There are no surface waters with "designated" Beneficial Uses or water quality standards in the Dry Creek-Frontal Smoke Creek Desert or Lower Squaw Creek HUC-12 watersheds.

SWPA Acreage	Type	Acres
Land Jurisdiction	Washoe County Non- Federal: BLM:	109 294
Land Use	Agriculture: Vacant:	63 340

Land uses and jurisdictions in the SWPAs are summarized in the adjacent table and illustrated by the Land Classification Figure.

The only three entities that share ownership and management in these SWPAs are the Gerlach GID, the Courtney Family Trust, and the BLM.


Smoke Creek Desert
Groundwater Basin
Land Classification
0
30,000 Feet
N
7/9/2020
RCI
Resource Concepts Inc
Groundwater Basin
County Boundary
State Boundary
Land Use
Agricultural
Commercial / Industrial
Public Facilities / Utilities
Residential
Vacant
Smoke Creek Desert
SMOKE CREEK DESERT
San Emidio Desert
Hualapai Flat
BLACK ROCK DESERT
Pyramid Lake Valley
Honey Lake Valley
Dewey Parker Reservoir
Disabel Reservoir
Upper Coyote Reservoir
Dry Steer Lake
Willow Lake
Garden Lake
Buckhorn Lake
Round Corral Reservoir
SOB Lake
Steer Lake
Burnt Lake
Pilgrim Lake
Buckhorn Reservoir
Fly Reservoir
East Side Reservoir
California
Nevada
Washoe County
Pershing County
Smoke Creek
Squaw Creek
Clear Creek
Red Mountain Creek
Negro Creek
North Fork Frog Creek
West Fork Buffalo Creek
Buffalo Creek
Red Rock Creek
Painters Creek
Rush Creek
Deep Creek
Pea Creek
Bull Creek
Skedaddle Creek
Jenny Creek
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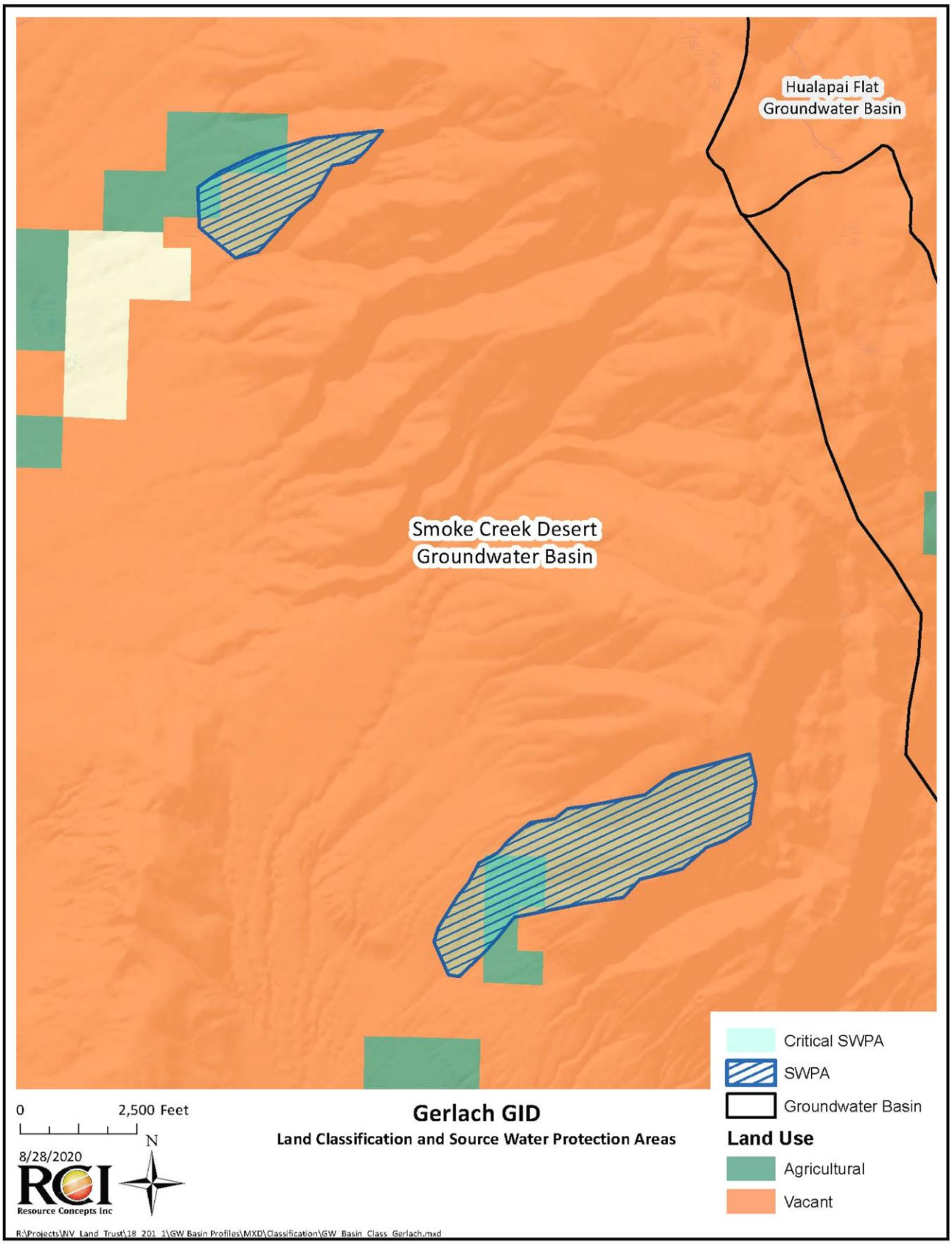
Hualapai Flat
Groundwater Basin
Smoke Creek Desert
Groundwater Basin
Critical SWPA
SWPA
Groundwater Basin
Land Use
Agricultural
Vacant
0
2,500 Feet
N
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RCI
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Gerlach GID
Land Classification and Source Water Protection Areas
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Water Quality Standards and Beneficial Uses

Water quality standards for surface water in the state of Nevada are established by Nevada Administrative Code (NAC) NAC 445A.11704 through NAC 445A.2234. Smoke Creek Desert Basin is located within the "Black Rock Desert Region". There are no designated beneficial uses (NAC 445A.1282) or water quality standards (NAC 445A.1284) for surface water bodies in the Dry Creek-Frontal Smoke Creek Desert and Lower Squaw Creek HUC-12s. For groundwater, Nevada's policy is to protect all groundwater against deterioration in quality, in order to maintain supplies that are suitable for beneficial use.

Potential and Existing Water Quality Concerns

The springs used by the Gerlach GID are highly valued because they are isolated and are the only sources of water for the town of Gerlach.

The primary potential and existing water quality concerns in this basin are listed below and described in the following paragraphs:

- Sediment and/or erosion due to wildfire.
- Potential pollution from bacteria related to livestock or wildlife.

The primary causes of erosion and sedimentation in this watershed include wildland fire and noxious weeds. High-severity wildfires alter the overall structure of the ecosystem through the removal of vegetation, leaving limited ground cover. Severe fires also create a waxy, water-repellant layer over the soil which increases water and soil runoff (NDF, 2011). Areas invaded by noxious weeds are more susceptible to erosion and sedimentation in several ways. Noxious weeds do not have a root structure to retain soil and resist wind or water erosion. The fire risk is increased because noxious weeds are more flammable than native species. Wildfire could destabilize the watersheds above the springs and/or damage the water system facilities.

Groundwater can be contaminated through seepage from animal waste which could carry bacteria, viruses, and nutrients (EPA, 2005). Managing grazing and keeping wildlife out of the spring SWPA can help to prevent contaminants from entering these drinking water sources.

Overall, according to the Nevada Vulnerability Assessment Program Water System Report prepared by Nevada Division of Environmental Protection (NDEP) for the Gerlach GID, the two springs have low vulnerability to surface water contamination (NDEP, 2017).

Strategies to Protect and Improve Water Quality

The water quality concerns identified in this basin can be addressed through management strategies described in this section, the proposed projects detailed in the Project Profiles, as well as applicable on-going water quality projects and programs described under Stakeholders and Plans. These strategies pertain to the entire basin but may be prioritized in SWPAs.

The SWPA buffers in this groundwater basin are based on a 20-year time of travel for groundwater. These areas are illustrated on the Jurisdiction and Source Water Protection Areas Figure. The following objectives are significant in both future and on-going SWPA management:

Source Water Protection Area Identification and Management

A SWPA is a management area surrounding a surface water or groundwater resource that supplies water for public consumption. Activities in these buffer areas can affect the quality of water downstream or underground. These management strategies acknowledge the value of these SWPAs to prevent future contamination of sources of drinking water.

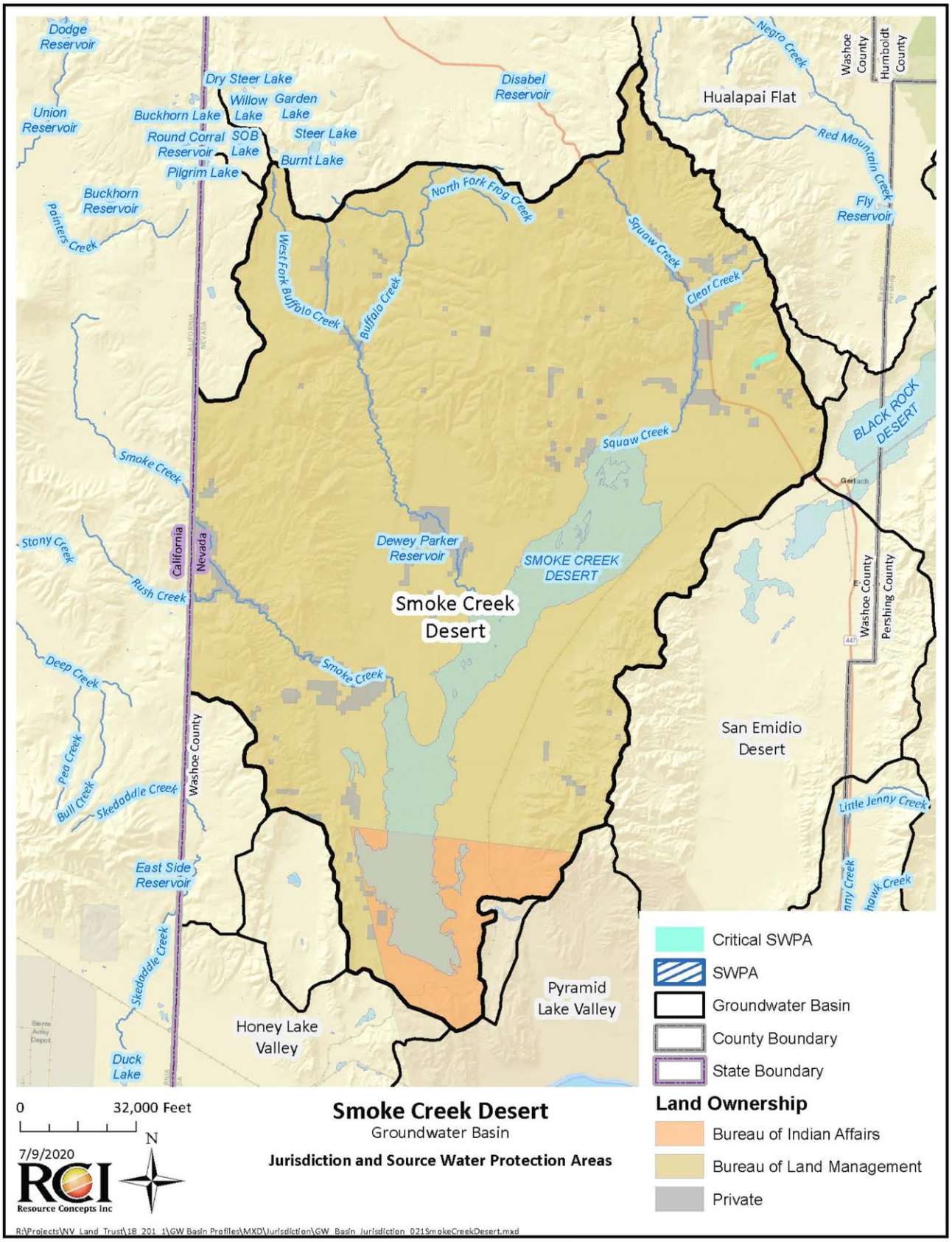
The following objectives are significant in both future and on-going SWPA management:

- Inform landowners in SWPAs about their proximity to a valuable drinking water source and how they can help protect their water quality.
- Encourage coordination between Public Water Systems, landowners, and City or County planners to consider the importance of SWPAs in project reviews.
- Explore collaborative funding for water quality improvements and support the resource investigations needed to develop viable projects.
- Prioritize physical improvements in SWPAs to protect and improve source water quality.

Education and Outreach

The following education and outreach objective is intended to help effectuate positive actions to protect water quality:

- Inform landowners and developers within SWPAs about the importance of avoiding contamination and their proximity to a valuable drinking water source.


Dodge Reservoir
Union Reservoir
Buckhorn Lake
Dry Steer Lake
Willow Lake
Garden Lake
Round Corral Reservoir
SOB Lake
Steer Lake
Pilgrim Lake
Burnt Lake
Buckhorn Reservoir
Painters Creek
Disabel Reservoir
Hualapai Flat
Negro Creek
Washoe County
Humboldt County
Red Mountain Creek
Fly Reservoir
North Fork Frog Creek
Squaw Creek
Clear Creek
West Fork Buffalo Creek
Buffalo Creek
BLACK ROCK DESERT
Smoke Creek
Stony Creek
California
Nevada
Dewey Parker Reservoir
SMOKE CREEK DESERT
Rush Creek
Smoke Creek Desert
Deep Creek
Pea Creek
Bull Creek
Skedaddle Creek
Washoe County
Pershing County
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Little Jenny Creek
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Pyramid Lake Valley
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SWPA
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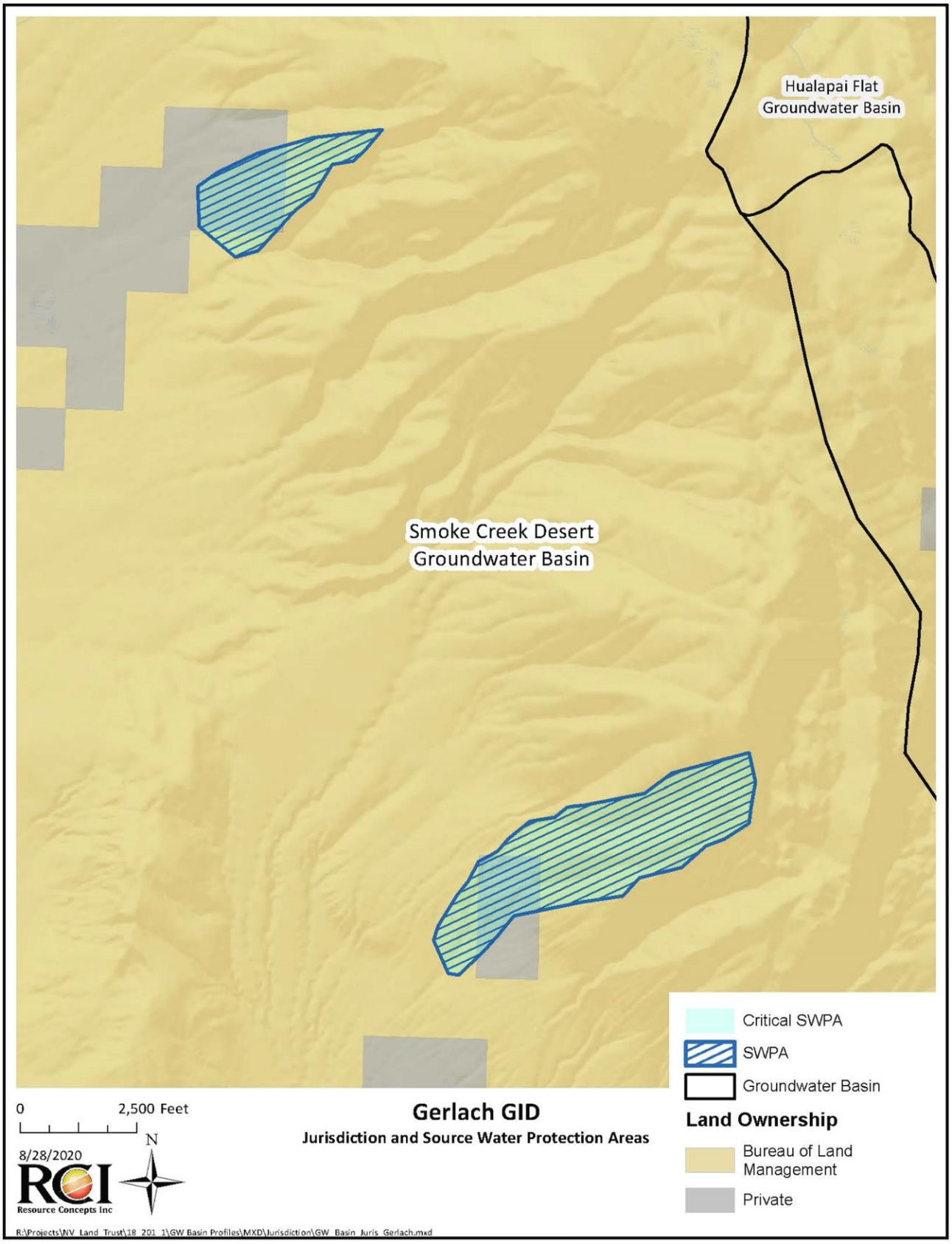
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Interagency Communication

The following interagency communication objectives are important tools to both reinvigorate and invest additional resources in water quality, as well as utilize existing resources and programs:

- Support communication and coordination between the three local land managers: the Gerlach GID, BLM, and the private landowner.
- Collaborate with the local weed management authority to support their efforts in noxious weed management (WSCWMA Website).

Wildfire and Fuel Management

Wildland fire is a threat to water quality and coordinated fuel management on wildlands can help reduce risks to water quality. Stakeholders and partners may consider the following objective as it pertains to wildfire and fuel management:

- Support and collaborate with the Nevada Cohesive Strategy effort and the Shared Stewardship Agreement, the blueprint to address Nevada's wildland fire issues.

Resource Investigation and Planning

Stakeholders may consider supporting the following resource investigation and planning, which can help fill data gaps, inform implementation designs and prioritize projects:

- Explore and engage funding sources available for the Gerlach GID to expand monitoring, implement improvements, and develop contingency plans.

Water Quality Best Management Practices

Stakeholders may consider supporting the following Water Quality Best Management Practices (BMPs), that may improve and prevent degradation to water quality resources:

- Water quality improvement projects.
- Physical improvements prioritized in SWPAs for water quality improvement and protection.

Proposed Implementation Projects

Proposed implementation actions are generally described under the Strategies to Protect and Improve Water Quality. Specific implementation actions have been developed into proposed projects by local stakeholders and are described in Project Profiles. These Project Profiles include the information needed, as identified in the Environmental Protection Agency (EPA) guidance for nine critical elements for an endorsable watershed management plan or the Nevada Integrated Source Water Protection Program. Future projects could also be brought forward to funding agencies through:

- Demonstrating advancement of the strategies identified for this watershed in the Source Water and Watershed Protection Plan.
- Using the Project Profile format to establish consistency with the nine critical elements of an EPA endorsed plan.

As discussed in the following Stakeholders and Plans section, municipality and agency projects are also incorporated by reference.

Stakeholders and Plans

Stakeholder information and existing plans were used extensively in development of this Plan for Washoe County. These municipalities and agencies each have unique strategies and capital improvement plans that include water quality protection or improvement projects. These are updated regularly at differing timeframes (i.e. annually, every five years, etc.) according to their specific budgeting and planning processes. The applicable planning documents are briefly described and referenced in this section. Those projects pertaining to water quality protection and improvement are incorporated by reference.

Project Stakeholders	
• Bureau of Land Management • Nevada Division of Environmental Protection • Nevada Division of Forestry	• Washoe County • Washoe County Health District • Western Regional Water Commission

Bureau of Land Management

The Nevada BLM has Resource Advisory Councils (RACs) which allow community members to be involved in natural resource planning and management issues on BLM managed public land. Washoe County is a part of the Sierra Front-Northwestern Great Basin RAC which is administered through the BLM-Carson City and Winnemucca District offices. BLM Resource Advisory Councils-Nevada

The BLM also has specific Resource Management Plans (RMPs), that apply to this basin. These plans generally outline the way that the BLM currently manages and intends to manage the multiple resources on public land. Within this basin, the following plans and sections are applicable:

- Carson City Consolidated Resource Management Plan (2001):

  RIP-1: Riparian Management discusses how riparian areas on BLM land should be managed, monitored, and maintained. The desired outcome in this section is to protect and maintain existing and potential fisheries and riparian areas in good or better condition.

  SWA-1: Soils, Watershed and Air Quality describes specific techniques and goals for all watersheds within the planning area, such as reducing soil loss, flood damage, and sediment damage from human activities.

  WAT-1: Water Resources discusses management for good water quality on public lands such as watershed management plans as an important administrative action.

- Carson City Fire Management Plan (2016):

  The Fire Management Plan (FMP) goal is to restore sagebrush ecosystems throughout the planning area. In doing so, the risk of wildfire and its negative effects should eventually decrease. Since wildfire is an issue in this basin, management to reduce its risk is a key planning component.

Nevada Division of Environmental Protection

The NDEP has a goal to preserve and enhance the environment of the State to protect public health, sustain healthy ecosystems, and contribute to a vibrant economy. Specifically, the Integrated Source Water Protection Program under the Safe Drinking Water Bureau works to help protect source water quality. This program offers technical assistance for source water protection projects. The program coordinates source water protection activities at the local, state, and federal levels, and encourages community-based protection and preventive management strategies to ensure all public drinking water resources are kept safe from future contamination. The 2010 Nevada Integrated Source Water Protection Program guidance document details the program components as well as the requirements for a State-endorsed Community Source Water Protection Plan.

Nevada Division of Forestry

The Nevada Division of Forestry (NDF) is a State agency that uses a collaborative process to deliver science based natural resource management and protection to promote resilient landscapes, fire adapted communities, and safe, effective wildfire response provided by employees that embrace the core values of duty, respect, and integrity.

NDF provides professional natural resource and wildland fire management services to Nevada citizens and visitors to enhance, conserve and protect forest, rangeland and watershed values, endangered plants and other native flora. Protection of these resources helps to improve water quality:

- Community Wildfire Protection Plans:

  Community Wildfire Protection Plans (CWPPs) are authorized and defined in Title I of the Healthy Forests Restoration Act of 2003 (HFRA). CWPPs represent the best opportunity for communities to address the challenges of the Wildland-Urban Interface. A CWPP helps communities define their priorities for the protection of life, property, and shared assets-at-risk from wildfires. Developing a CWPP encourages community members and leaders to have valuable discussions about wildfire preparedness, evacuation planning, and local fire district capabilities. The CWPP increases grant funding opportunities by prioritizing fuel reduction projects around and within the community.

- Nevada Wildland Fire Cohesive Strategy:

  The Nevada Fire Board Oversight Body is the custodian of the 2015 Nevada Wildland Fire Cohesive Strategy Summit's Action Plan to ensure goal achievement and identify emerging topics. This oversight body acts as an "advisory" body and is charged with taking the Nevada Cohesive Strategy Summit report and its Action Steps, ensuring that goal achievement is accomplished and monitoring emerging topics through the Nevada Fire Board. This body monitors progress, develops issue resolution, and addresses emerging issues such as protecting water quality.

Washoe County Health District

The Washoe County Health District has regulatory authority over a wide variety of programs and services in the Truckee Meadows including underground storage tanks, septic systems, all public water systems, domestic wells, water projects and community development, grading permits, solid waste management and emergency preparedness. The Health District regulations are provided in several documents as listed below:

- Regulations of the Washoe County District Board of Health Governing Sewage, Wastewater and Sanitation. These regulations provide the minimum requirements to be followed by any person developing property served by an on-site

sewage disposal system. These requirements are promulgated to prevent the spread of disease, protect the water quality of this County and ensure the on-site sewage disposal systems function properly.

- Regulations of the Washoe County District Board of Health Governing Well Construction. These regulations provide minimum requirements to be followed by any person when drilling and plugging specific kinds of wells. A well construction permit is required to drill a well for consumptive use or monitoring wells. These requirements are primarily promulgated to protect the quantity and quality of the waters of this County from waste and contamination, and to provide public protection by enforcing proper construction and plugging of wells.
- Regulations of the Washoe County District Board of Health Governing Solid Waste Management. These regulations protect water quality through the regulation of municipal solid waste landfills.

Washoe County

Activities in Washoe County are reviewed according to the Master Plan Planning Areas. The Smoke Creek Desert area is included in the Gerlach/Empire planning area. The County has Citizen Advisory Boards (CABs) which provide important community perspective on local issues to the Washoe County Board of Commissioners. The Smoke Creek Desert area is within the Gerlach/Empire CAB (CAB Boundaries).

The Washoe County Master Plan (2008) has Goals and Policies for Public Services and Facilities, and Open Space and Natural Resource Management. Applicable sections include:

- Article 418, Significant Hydrologic Resources, which regulates development activity within and adjacent to perennial streams to ensure that these resources are protected and enhanced. (Note: this does not apply to the Truckee River).
- Article 420, Storm Drainage Standards, sets forth standards for ensuring that both private and public development provides adequate protection for citizens and property. Therefore, it minimizes and controls erosion and pollution impacts on the natural environment, and additionally minimizes maintenance costs for drainage and flood control systems.
- Article 421, the Storm Water Discharge Program, which protects and enhances the water quality of watercourses, water bodies, groundwater and wetlands in a manner pursuant to and consistent with the Clean Water Act.
- Article 810, Special Use Permits, which provides a method of reviewing certain uses to determine if they have the potential to adversely affect public facilities in the vicinity.

Washoe County also provides comprehensive services for construction and maintenance roads, landscaping and drainage facilities; county-wide planning and code compliance; and emergency response services for fire and hazardous materials. All of these roles contribute to preserving and improving water quality.

Western Regional Water Commission and the Northern Nevada Water Planning Commission

The Western Regional Water Commission (WRWC) focuses on improving water resource planning at the regional level and facilitating coordinated resource management among City of Reno, City of Sparks, Washoe County, Truckee Meadows Water Authority (TMWA), Truckee Meadows Water Reclamation Facility (TMWRF), South Truckee Meadows GID and Sun Valley GID.

The Northern Nevada Water Planning Commission (NNWPC) is a technical advisory panel that reports to the WRWC. The NNWPC develops and updates a Comprehensive Regional Water Management Plan (RWMP) and makes recommendations to the WRWC for adoption. In addition, the NNWPC develops priorities and an annual budget for the Regional Water Management Fund, also for recommendations to the WRWC.

The Comprehensive Regional Water Management Plan includes several applicable objectives:

- Objective 1.2 Provide for a Sustainable Water Supply and an Acceptable Level of Service to the Community (including protecting groundwater recharge areas).
- Objective 1.3 Implement measures to protect and enhance water quality for a sustainable water supply (including source water protection).
- Objective 2.1 Promote Efficient Use of Resources (Reduction of Non-Point Source Pollution for TMWRF Pollutant Credit).
- Objective 2.2 Manage wastewater for protection and enhancement of water quality.
- Objective 3.1 Effective and integrated watershed management (protection of human health, property, and water quality, including storm water).

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