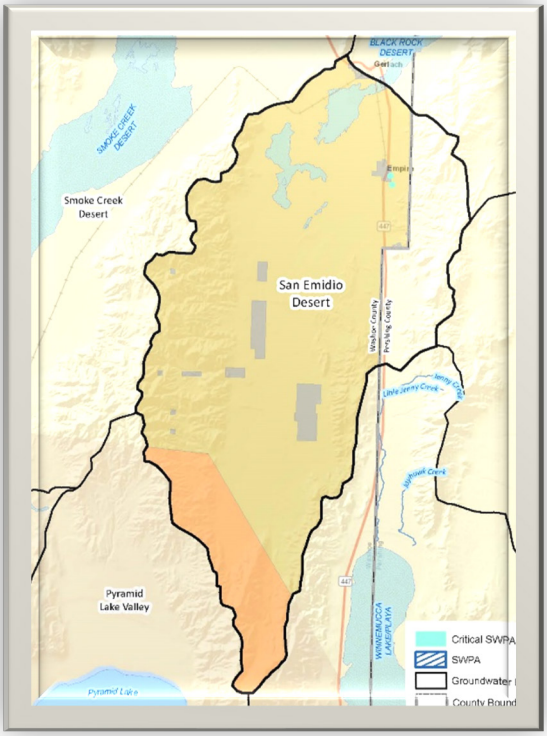
San Emidio Desert

Groundwater Basin #022, Source Water Profile

Click here for the SWPA Map



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Introduction

The San Emidio Desert 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 town of Empire and the Empire Mining Company. 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 San Emidio Desert is a north-south oriented hydrographic area of 305 square miles and bounded by the Fox Range on the west and the Selenite Range on the east. The mountains are composed mostly of Tertiary volcanic rocks and Cretaceous granitic rocks. The lowlands also are underlain by playas at the north and south ends of the area. The aquifer is composed mostly of alluvial fan deposits and volcanic rocks. Ground water is believed to move from the high-altitude recharge area in the Selenite Range westward to the basin lowlands. The groundwater gradient is believed to be similar to the slope of land surface.

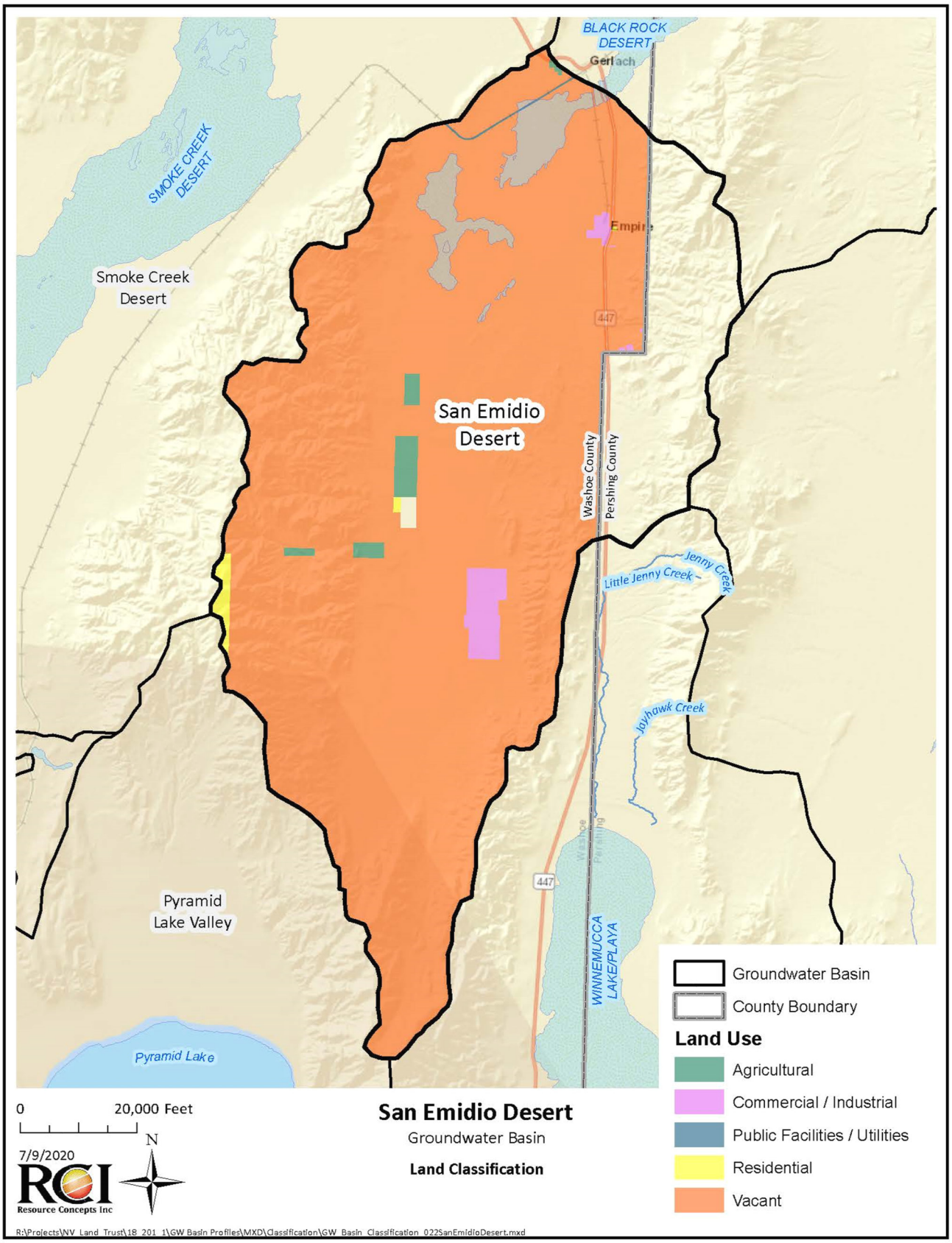
The only sources of public water supply in the San Emidio Desert are two active wells located on upper parts of the alluvial fan near the Selenite Range front in the northeastern part of the hydrographic area. Both wells are in the Town of Empire HUC12 watershed. The wells are operated by one public water system, the Empire Mining Company. Land at the wells is owned by the Empire Mining Company and the BLM manages portions of the SWPA. SWPAs were developed county-wide by stakeholders to help protect drinking water sources. The following table summarizes key water quality aspects in this basin.

Basin Summary	
Basins	• Groundwater Basins: San Emidio Desert #022 • HUC-12 Watershed: Town of Empire #160402030500
Source Water Protection Areas	• A SWPA provides a buffer around public water system wells, and it represents a precautionary indicator to safeguard the drinking water sources. • Two wells are managed by one public water system that provides drinking water to the town of Empire and Empire Mining Company. This water system serves 350 people. • 117 acres make up the SWPA in this Basin.
Special Considerations & Issues	• No surface waters are used for public water supply. • There are no surface waters with "designated" Beneficial Uses or water quality standards in the Town of Empire HUC-12 watershed.

SWPA Acreage	Type	Acres
Land Jurisdiction	Washoe County Non- Federal: BLM:	33 83
Land Use	Vacant:	117

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

The only two entities that share ownership and management in these SWPAs are the Empire Mining Company and the BLM.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Gerlach
SMOKE CREEK DESERT
Smoke Creek Desert
Empire
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San Emidio Desert
Washoe County
Pershing County
Little Jenny Creek
Jenny Creek
Jayhawk Creek
Pyramid Lake Valley
WINNEMUCCA LAKE/PLAYA
Pyramid Lake
Groundwater Basin
County Boundary
Land Use
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Commercial / Industrial
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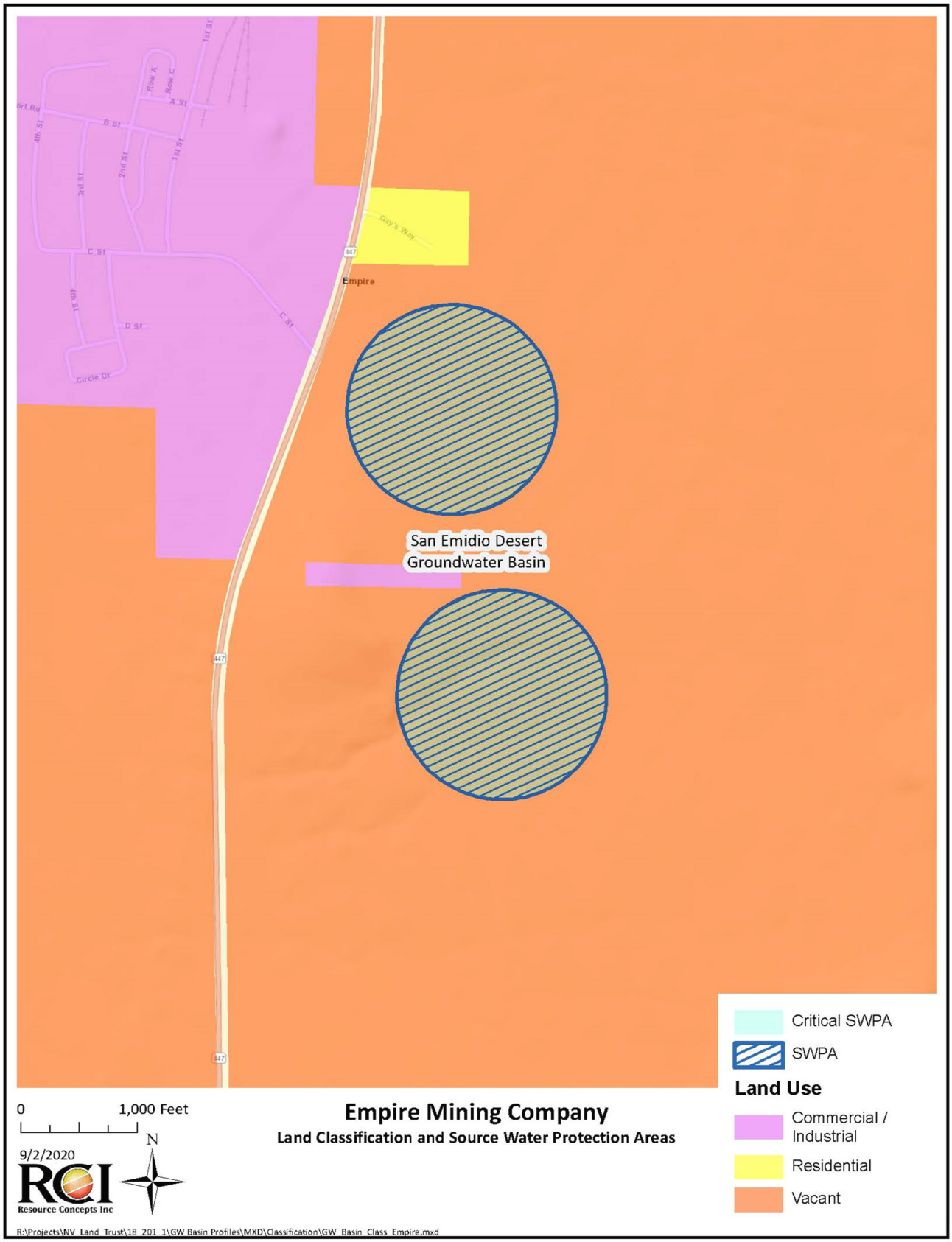
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Water Quality Standards and Beneficial Uses

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. The San Emidio 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 Town of Empire HUC-12. 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 wells used by the Empire Mining Company are highly valued because they are isolated and the only sources of water for the town of Empire and the mining company.

At this time, there is development in the vicinity of the wells and all mining activity appears to be down gradient of the SWPAs. Overall, according to the Nevada Vulnerability Assessment Program Water System Report prepared by Nevada Division of Environmental Protection (NDEP) for the Empire Mining Company, the aquifer that provides water to the SWPAs has 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.

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 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:

- 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.

Interagency Communication

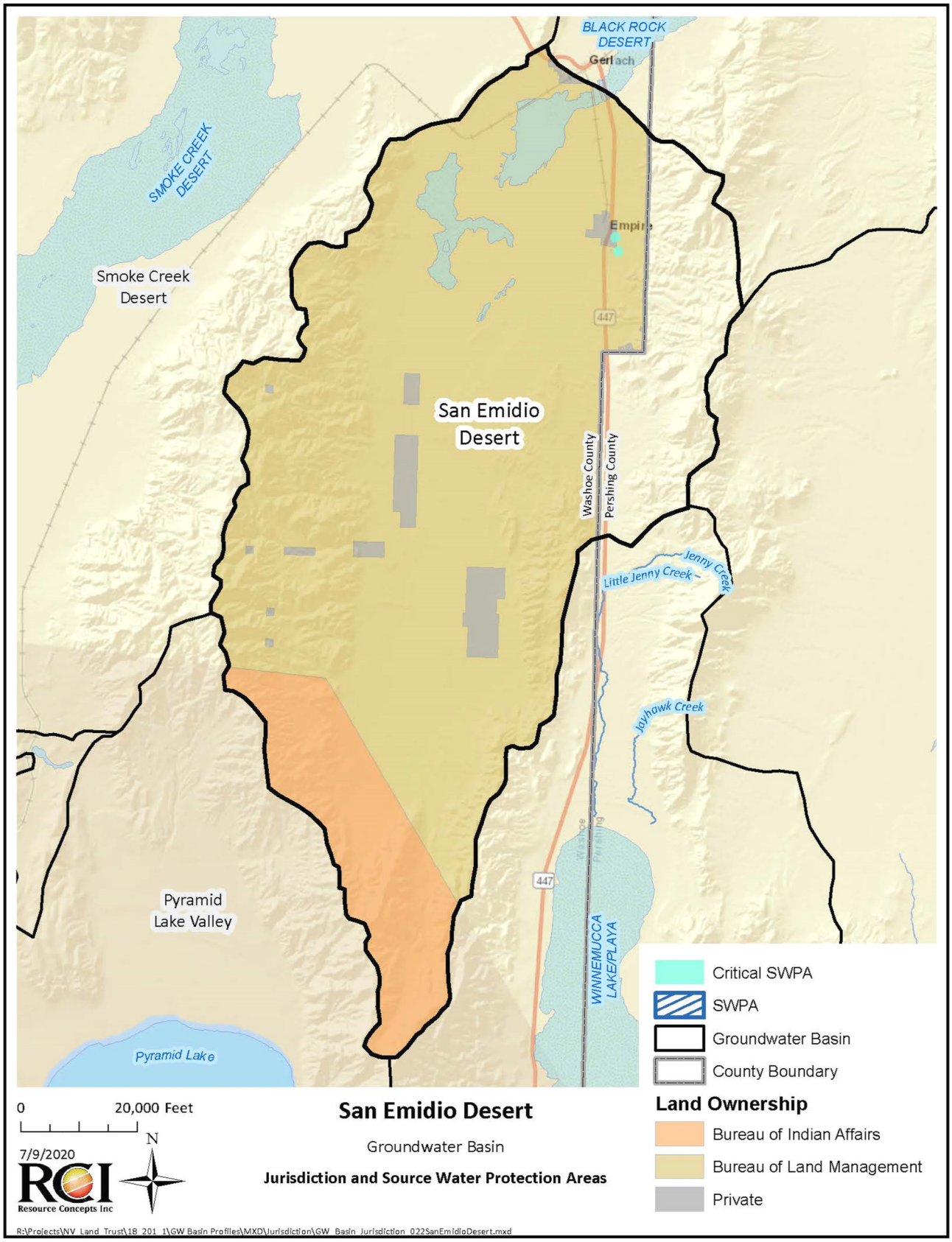
The following interagency communication objective is an important tool to both reinvigorate and invest additional resources in water quality, as well as utilize existing resources and programs:

- Support communication and coordination between the two local land managers: The Empire Mining Company and the BLM.

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 Empire Mining Company to expand monitoring, implement improvements, and develop contingency plans.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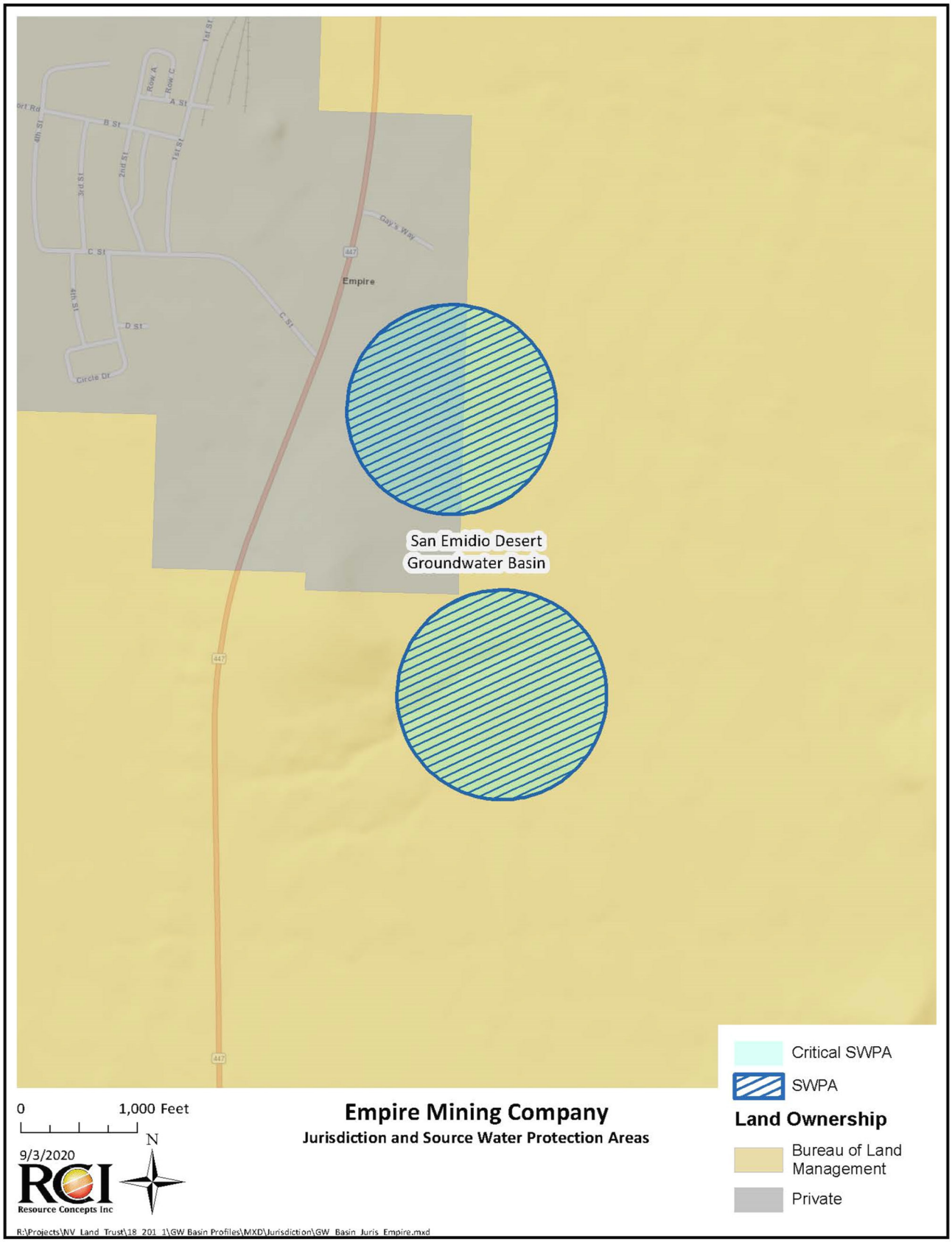
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Water Quality Best Management Practices

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

- Water quality improvement projects.
- Proper abandonment of wells.
- 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	• 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, or 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.

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 San Emidio 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 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, 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).

References

NDEP BMRR, Nevada Division of Environmental Protection. Bureau of Mining Regulations and Reclamation

NDEP BSDW, Vulnerability Assessment Program (VAP) Public Water System Report, 2017.

NDEP BWQP, Nevada Division of Environmental Protection, 2016-2018. Nevada 2016-2018 Water Quality Integrated Report

NDEP, Nevada Integrated Source Water Protection Program, 2010. Nevada Integrated Source Water Protection Program

USGS, Mining and Water Quality. Mining and Water Quality

Washoe County Master Plan, 2008. Washoe County 2008 Master Plan, Washoe County Health District

WRWC, Western Regional Water Commission, Comprehensive Regional Water Management Plan 2016-2035 Update, 2017. WRWC Comprehensive Regional Water Management Plan 2016-2035