Town of Ophir
Source Water Protection Plan

San Miguel County, Colorado
August 18, 2020

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For the Community Water Provider:
Town of Ophir, PWSID# 157600

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This Source Water Protection Plan is a planning document and there is no legal requirement to implement the recommendations herein. Actions on public lands will be subject to federal, state, and county policies and procedures. Action on private land may require compliance with county land use codes, building codes, local covenants, and permission from the landowner. This SWPP for the Town of Ophir was developed using version 16.01.04 of the Colorado Rural Water Association's Source Water Protection Plan Template.

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COMMON ACRONYMS

BMP	Best Management Practice
CDPHE	Colorado Department of Public Health and Environment
CRWA	Colorado Rural Water Association
EPA	Environmental protection Agency
GIS	Geographic Information System
GPD	Gallons per Day
PSOC	Potential Source of Contamination
SWAA	Source Water Assessment Area
SWAP	Source Water Assessment and Protection
SWPA	Source Water Protection Area
SWPP	Source Water Protection Plan

EXECUTIVE SUMMARY

There is a growing effort in Colorado to protect community drinking water sources from potential contamination. Many communities are taking a proactive approach to preventing the pollution of their drinking water sources by developing a source water protection plan. A source water protection plan identifies a source water protection area, lists potential contaminant sources and outlines best management practices to reduce risks to the water source. Implementation of a source water protection plan provides an additional layer of protection at the local level beyond drinking water regulations.

The Town of Ophir values a clean, high quality drinking water supply and decided to work collaboratively with area stakeholders to develop a Source Water Protection Plan. The source water protection planning effort consisted of public planning meetings with stakeholders including local citizens and landowners, private businesses, water operators, local and state governments, and agency representatives. A planning workshop was held on September 20, 2016 at the Ophir Town Hall in Ophir, Colorado to encourage local stakeholder participation in the planning process. Colorado Rural Water Association was instrumental in this effort by providing technical assistance in the development of this Source Water Protection Plan.

The Town of Ophir obtains its drinking water from two springs, collectively known as Warner Springs, located north of town and one surface water intake off Waterfall Creek. The Source Water Protection Areas for these water sources includes the Waterfall Creek watershed, the Warner Springs and Spring Gulch drainages, and a 100-foot buffer around the pipeline from Waterfall Creek to Ophir's treatment facility. These Source Water Protection Areas are the areas that the Town of Ophir has chosen to focus its source water protection measures to reduce source water susceptibility to contamination. The Steering Committee conducted an inventory of potential contaminant sources and identified other issues of concern within the Source Water Protection Area.

The Steering Committee developed several best management practices to reduce the risks from the potential contaminant sources and other issues of concern. The best management practices are centered on the themes of building partnerships with community members, businesses, and local decision makers; raising awareness of the value of protecting community drinking water supplies; and empowering local communities to become stewards of their drinking water supplies by taking actions to protect their water sources.

The following list highlights the highest priority potential contaminant sources and/or issues of concern and their associated best management practices.

- Security/Vandalism
    1. Install or replace signage at strategic points within the Town of Ophir's SWPAs about source water protection.
        - Request Source Water Protection Road Signs from CDPHE.
        - Develop signage with local contact info to display below CDPHE's signs.
        - Install Source Water Protection Road Signs.
    2. Install, repair, and maintain fencing, security gates, locks, and/or security camera at/near intakes and storage tanks.
- Forest Health

1. Share electronic and hard copies of the SWPP and GIS shapefiles of the SWPA with the USFS, CSFS, San Miguel County, and Private Landowners.
    - Gather contact information & create mailing list for distribution;
    - Utilize CRWA's "SWPP Distribution Letter" template to develop a cover letter for SWPP distribution;
    - Print hard/CD copies of SWPP; print CDs with SWPA GIS shapefiles;
    - Distribute & SWPP Distribution Cover Letter along with copy of Town of Ophir' SWPP and SWPA GIS shapefiles.
2. Support adaptive forest management in conjunction with regional entities with the US Forest Service
3. Continue to monitor water sources for impacts cause by decreased forest health.
4. Explore possible grants through West Region Wildfire Council for further mitigation & education.

- Infrastructure Failure
    1. Continue to conduct maintenance on Town of Ophir's water infrastructure.
    2. Develop a long-term maintenance plan for the Town of Ophir's water infrastructure.
    3. Update the Town of Ophir Emergency Operations Plans to include infrastructure failure as a criterion.
    4. In the event of infrastructure failure, utilize Code Red and mass email to alert residents.
- Abandoned Mines
    1. Share electronic and hard copies of the Town of Ophir' SWPP and GIS shapefiles/maps of the SWPAs with CDPHE, DRMS, CDNR, USFS, EPA, San Miguel Watershed Coalition, San Miguel Conservation Foundation, and Private Landowners and request to be notified of mine blowouts and spill events within SWPAs in a timely manner.
        - Gather contact information & create mailing list for distribution;
        - Utilize CRWA's "SWPP Distribution Letter" template to develop a cover letter for SWPP distribution;
        - Print hard copies/Email SWPP; Email SWPA GIS shapefiles;
        - Distribute SWPP Distribution Cover Letter along with copy of Town of Ophir' SWPP and SWPA GIS shapefiles.
    2. Share Emergency Notification Cards with CDPHE, DRMS, CDNR, USFS, EPA, San Miguel Watershed Coalition, San Miguel Conservation Foundation, and Private Landowners.
        - Gather contact information & create mailing list for distribution;
        - Develop Emergency Notification Cards that includes maps of the SWPAs and water system contact information;
        - Print copies of Emergency Notification Cards;
        - Mail/Distribute Emergency Notification Cards.
    3. Update Town of Ophir Emergency Response Plan to include appropriate agencies as it pertains to abandoned mines
        - Develop notification procedures with organizations that might first notice the problems (e.g. San Miguel County, Telluride Fire Department, USFS, and/or Private Landowners.
        - Develop and maintain an effective contact list to report and collaborate on any issues that may arise.
        - Report any issues or threats that arise to the appropriate agencies.
    4. Coordinate water quality studies between the Town of Ophir, San Miguel County, USFS, San Miguel Watershed Coalition, Mountain Studies Entities, and any other relevant

entities. Share information on water quality studies between pertinent agencies and entities.

- Miscellaneous Water Quality Issues
    1. Continue to monitor air quality and coordinate further water quality and air quality studies between the Town of Ophir, San Miguel County, USFS, EPA, San Miguel Watershed Coalition, Mountain Studies Entities, and any other relevant entities. Share information on water quality studies between pertinent agencies and entities.
    2. Refer to Center for Snow & Avalanche Studies' Colorado Dust-on-Snow Program to monitor for dust accumulation on snowpack,
    3. Continue River Watch monitoring program
- Drought
    1. Develop water conservation measures and conservation plan for Town of Ophir's water supplies.
    2. Ensure Town of Ophir's water rights are well established.
- Public Education
    1. Post a copy of the SWPP on the Town of Ophir's website.
    2. Install signage at strategic points within the Source Water Protection Area that explains the importance of source water protection.
    3. Develop a brochure or flyer to distribute to community members that explains the importance of source water protection.

The Steering Committee recognizes that the usefulness of this Source Water Protection Plan lies in its implementation and will begin to execute these best management practices upon completion of this Plan.

This Plan is a living document that is meant to be updated to address any changes that will inevitably come. The Steering Committee will review this Plan at a frequency of once every 5-10 years or if circumstances change resulting in the development of new water sources and source water protection areas, or if new risks are identified.

INTRODUCTION

Source water protection is a proactive approach to preventing the pollution of lakes, rivers, streams, and groundwater that serve as sources of drinking water. For generations water quality was taken for granted, and still today many people assume that their water is naturally protected. However, as water moves through and over the ground, contaminants may be picked up and carried to a drinking water supply.

While a single catastrophic event may wipe out a drinking water source, the cumulative impact of minor contaminant releases over time can also result in the degradation of a drinking water source. Contamination can occur via discrete (point source) and dispersed (nonpoint source) sources. A discrete source contaminant originates from a single point, while a dispersed source contaminant originates from diffuse sources over a broader area. According to the US Environmental Protection Agency, nonpoint source pollution is the leading cause of water quality degradation (Ground Water Protection Council, 2007).

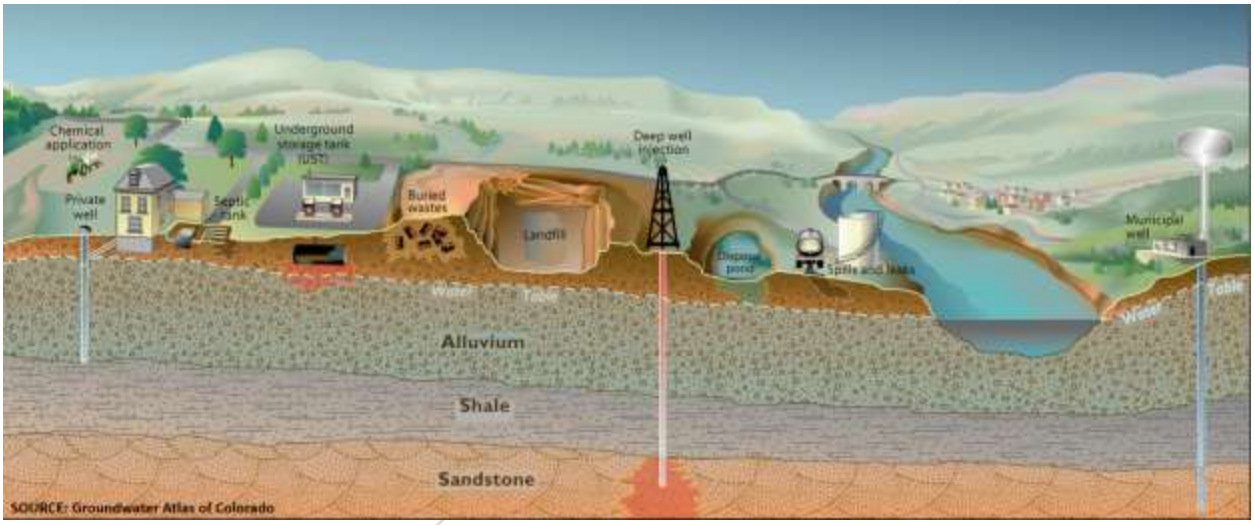

Figure 1: Schematic drawing of the potential source of contamination to surface and groundwater

The Town of Ophir recognizes the potential for contamination of their drinking water sources, and realizes that the development of this Source Water Protection Plan is the first step in protecting this valuable resource. Proactive planning is essential to protect the long-term integrity of the drinking water supply and to limit costs and liabilities. This SWPP demonstrates the Town of Ophir's commitment to reducing risks to their drinking water supply.

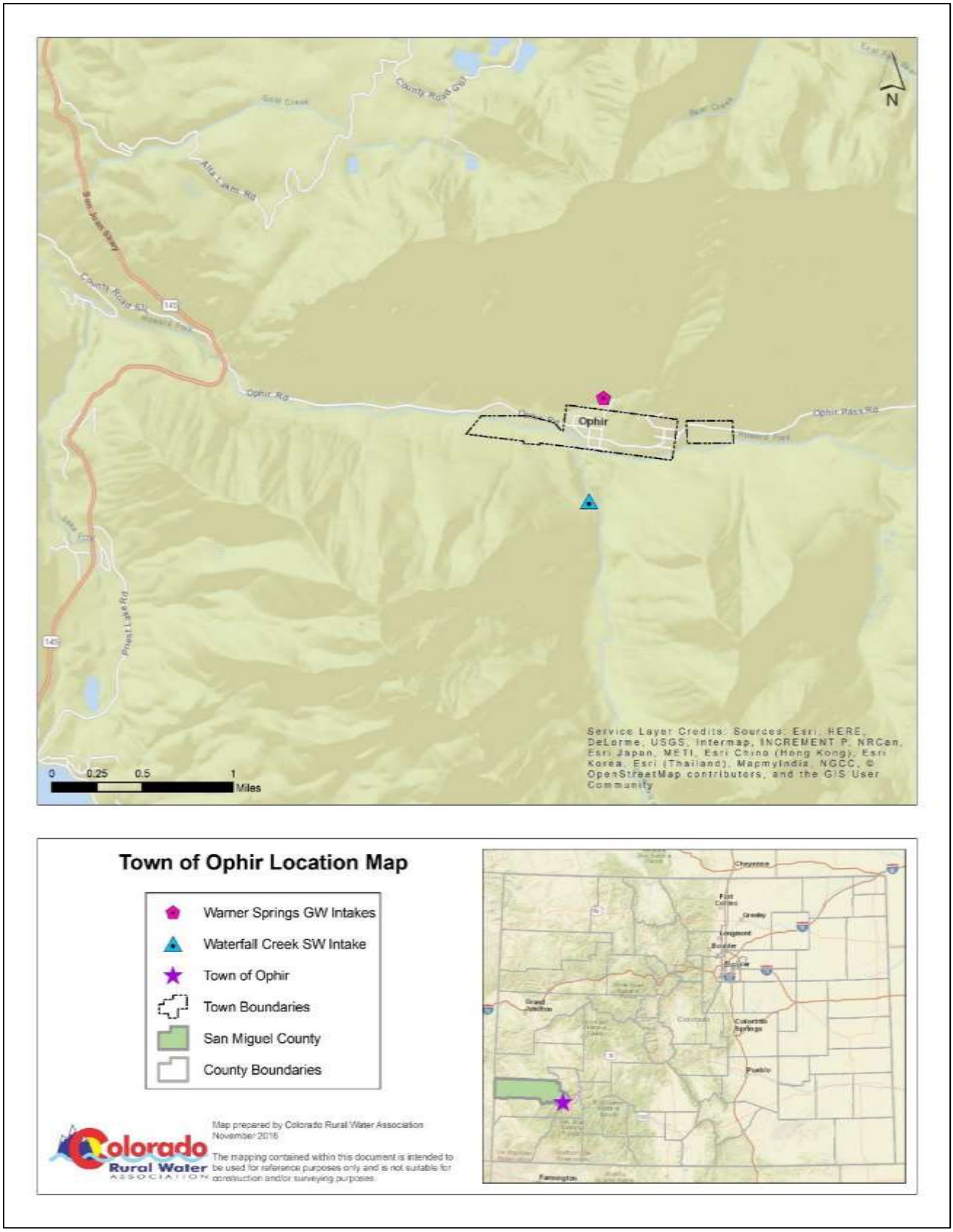

Figure 2: Location of the Town of Ophir and its Intakes within San Miguel County, Colorado

Purpose of the Source Water Protection Plan

The Source Water Protection Plan (SWPP) is a tool for the Town of Ophir to ensure clean and high quality drinking water sources for current and future generations. This Source Water Protection Plan is designed to:

- Create an awareness of the community's drinking water sources and the potential risks to surface water and/or groundwater quality within the watershed;
- Encourage education and voluntary solutions to alleviate pollution risks;
- Promote management practices to protect and enhance the drinking water supply;
- Provide for a comprehensive action plan in case of an emergency that threatens or disrupts the community water supply.

Developing and implementing source water protection measures at the local level (i.e. county and municipal) will complement existing regulatory protection measures implemented at the state and federal governmental levels by filling protection gaps that can only be addressed at the local level.

Background of Colorado's SWAP Program

Source water assessment and protection came into existence in 1996 as a result of Congressional reauthorization and amendment of the Safe Drinking Water Act. These amendments required each state to develop a source water assessment and protection (SWAP) program. The Water Quality Control Division, an agency of the Colorado Department of Public Health and Environment (CDPHE), assumed the responsibility of developing Colorado's SWAP program and integrated it with the Colorado Wellhead Protection Program.

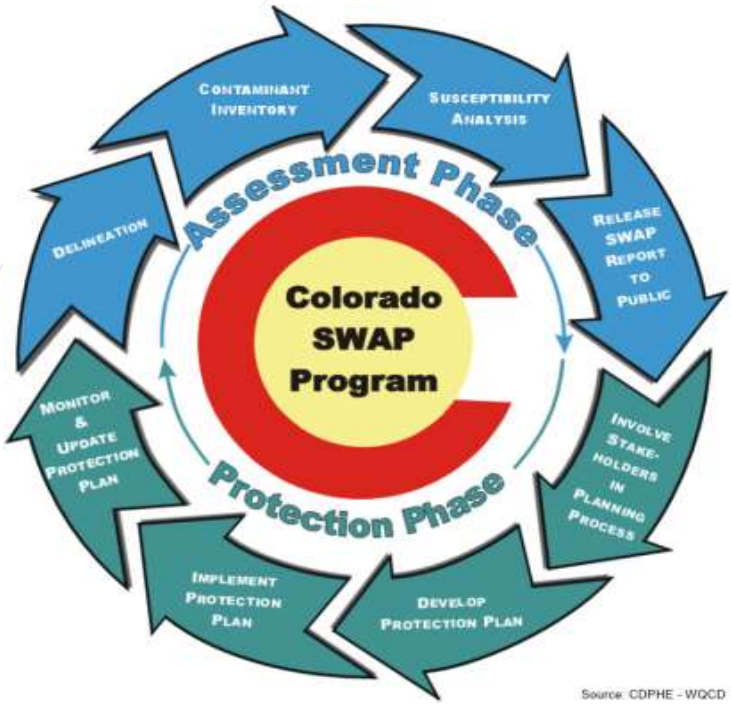

Figure 3: Source Water Assessment and Protection Phases

Colorado's SWAP program is an iterative, two-phased process designed to assist public water systems in preventing potential contamination of their untreated drinking water supplies. The two phases include the Assessment Phase and the Protection Phase as depicted in the upper and lower portions of Figure 3, respectively.

The Assessment Phase for all public water systems was completed in 2004 and consisted of four primary elements:

1. Delineating the source water assessment area for each of the drinking water sources;
2. Conducting a contaminant source inventory to identify potential sources of contamination within each of the source water assessment areas;
3. Conducting a susceptibility analysis to determine the potential susceptibility of each public drinking water source to the different sources of contamination;
4. Reporting the results of the source water assessment to the public water systems and the general public.

A Source Water Assessment Report (Appendix A-B) was provided to each public water system in Colorado in 2004 that outlines the results of this Assessment Phase.

Source Water Protection Phase

The Protection Phase is a non-regulatory, ongoing process in which all public water systems have been encouraged to voluntarily employ preventative measures to protect their water supply from the potential sources of contamination to which it may be most susceptible. The Protection Phase can be used to take action to avoid unnecessary treatment or replacement costs associated with potential contamination of the untreated water supply. Source water protection begins when local decision makers use the source water assessment results and other pertinent information as a starting point to develop a protection plan. As depicted in the lower portion of Figure 3, the source water protection phase for all public water systems consists of four primary elements:

1. Involving local stakeholders in the planning process;
2. Developing a comprehensive protection plan for all of their drinking water sources;
3. Implementing the protection plan on a continuous basis to reduce the risk of potential contamination of the drinking water sources; and
4. Monitoring the effectiveness of the protection plan and updating it accordingly as future assessment results indicate.

The water system and the community recognize that the Safe Drinking Water Act grants no statutory authority to the Colorado Department of Public Health and Environment or to any other state or federal agency to force the adoption or implementation of source water protection measures. This authority rests solely with local communities and local governments.

The source water protection phase is an ongoing process as indicated in Figure 3. The evolution of the SWAP program is to incorporate any new assessment information provided by the public water supply systems and update the protection plan accordingly.

SOURCE WATER SETTING

Location and Description

The Town of Ophir is located in the eastern portion of San Miguel County surrounded by steep forested mountains and cliffs in the western San Juan Mountains. Ophir's source waters are located in the Howard Fork sub-watershed, which is part of the San Miguel River Watershed Basin. The source waters originate on the mountainsides that surround the Town and lie mostly within public lands in the GMUG National Forest, managed by the Norwood Ranger District. There are a few parcels of private lands and abandoned mines within the source water areas as well as activities that consist of recreational and commercial use.

The San Miguel Watershed Rapid Assessment completed by the United States Department of Agriculture's Natural Resource Conservation Service (NRCS) characterizes the area as having steep, high mountain ranges and associated mountain valleys with elevations ranging from 6500 to 14,400 feet above sea level. Vegetation consists of sagebrush-grass at low elevations, and with increasing elevation rangers from coniferous forest to alpine tundra. Precipitation occurs mostly in the form of snowpack during winter months and ranges from 29 to 53 inches annually (USDA Natural Resources Conservation Service, March 2010).

Hydrologic Setting

The Town of Ophir operates a community water supply system that supplies drinking water to approximately 182 residents. The Town of Ophir obtains their drinking water from two springs, collectively known as Warner Springs, located north of town and one surface water intake in Waterfall Creek. Waterfall Creek is tributary to Howard Fork Creek and is part of the Howard Fork sub-watershed, which eventually makes its way to the San Miguel River. The EPA Watershed Quality Assessment Report for the San Miguel Watershed Basin does not list any stream segments that feed into Ophir's intakes as impaired (United States Enviornmental Protection Agency, 2012). In addition, the San Miguel Watershed Coalition provides water quality monitoring and has 34 monitoring sites throughout the watershed to provide independent data and supplement analysis to state and federal monitoring programs (San Miguel Watershed Coalition, 2014). Note that Ophir does this too.

The Town of Ophir has not petitioned the Water Quality Control Commission for the establishment of a classified ground water area and associated site-specific ground water quality standards for its ground water intakes under Regulation No. 42.

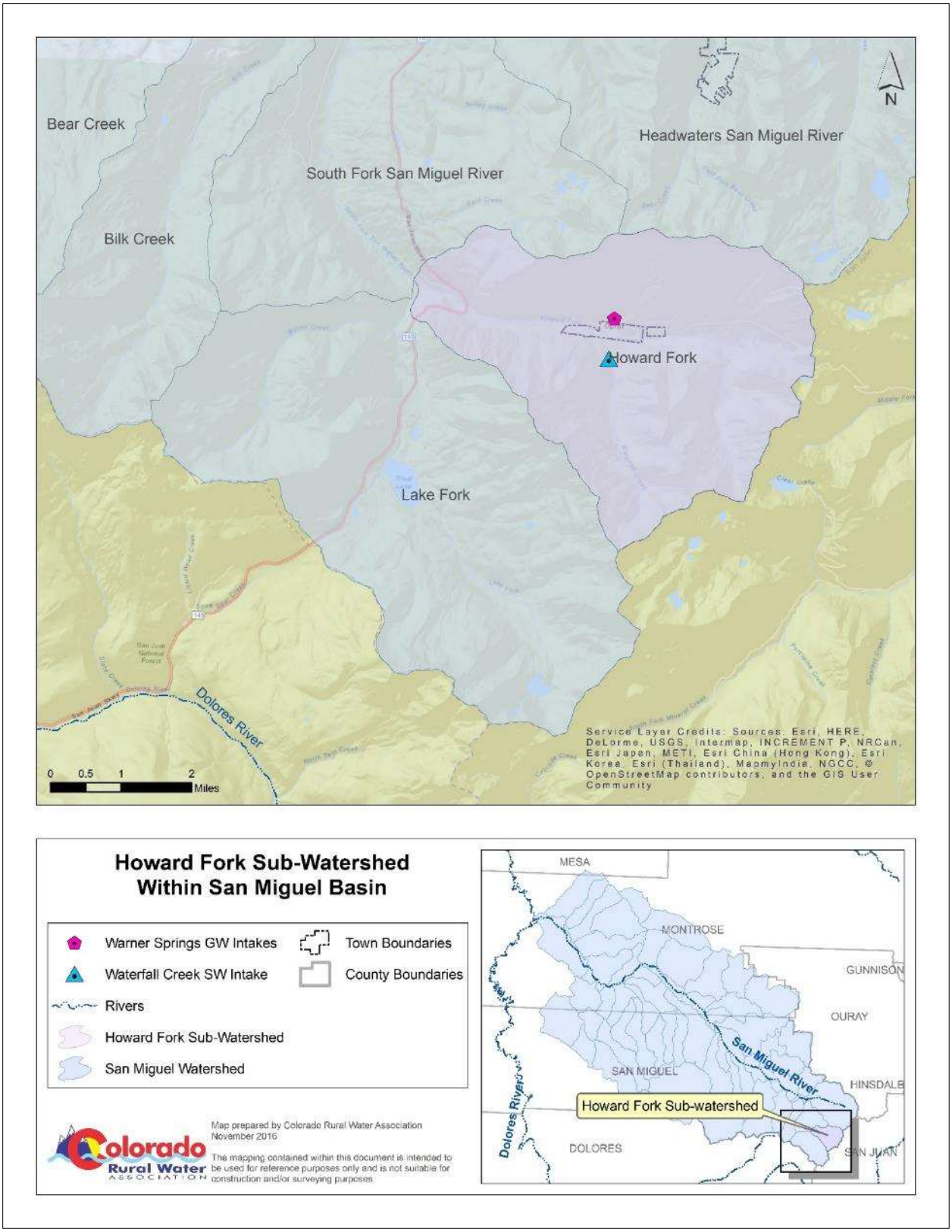

Figure 4: Howard Fork Sub-watershed within the San Miguel Basin

DRINKING WATER SUPPLY OPERATIONS

Water Supply and Infrastructure

The Town of Ophir operates a community water supply system that supplies drinking water to approximately 182 residents The Town of Ophir obtains their drinking water from one primary surface water intake in Waterfall Creek and two backup intakes from the Warner Spring in the Howard Fork sub-watershed.

Originally, the Town of Ophir utilized Waterfall Creek as its sole water source. There was an open 6-inch D.I.P. resting at the bottom of creek that functioned as the intake and no water treatment plant. In the 1990's, the Town of Ophir discontinued primary use of Waterfall Creek due to the CDPHE's requirement that chlorination would need to be used. At that point, the Town of Ophir developed the Warner Springs intake and constructed a small water treatment plant and pump house. Since the water flows from Warner springs are less reliable in quantity and less desirable in quality, the Town of Ophir actively pursued returning to Waterfall Creek as the primary drinking water source.

In 2012, the Town of Ophir completed and currently utilizes a hydro screen intake at the original location of the old intake in Waterfall Creek. This intake is located at approximately 10,000 feet and is about ½ mile south from the Town of Ophir's southern boundary on USFS lands. Raw water is delivered through D.I.P. to the new water treatment plant completed in 2012. The new water treatment plant, the new Waterfall Creek intake and the installation of an additional 35,000 gallons of water storage had project costs that were nearly 1.2 million dollars and the construction took approximately two years.

From the Waterfall Creek intake, the raw water runs through approximately ½ mile of D.I.P. to the new water treatment plant. The raw water runs through two initial strainers and into the Filter Tech Systems UltraFlex Hollow Fiber UltraFiltration System using the Norit X-Flow membrane with five modules. It is estimated the filtration system can produce up to 65 gallons per minute (gpm) at 5 degrees Celsius with a gross flux rate of 36.1 GFD. The water is chlorinated with a Severn Trent Water Purification ClorTec product utilizing an onsite Sodium Hypochlorite Generation System for disinfection. After treatment, drinking water is delivered to the 20,000-gallon water storage tank in west Ophir via head or pumped to the two 35,000-gallon water storage tanks in East Ophir. The Town of Ophir has a total of 90,000 gallons of treated water storage.

The backup water supply is the Warner Springs water supply located at approximately 9,800 feet and 300 feet north of the Town of Ophir northern boundary on USFS lands. The spring water is collected by subterranean membrane filters at two spring gathering points. The water from Warner Springs is treated in the same manner as Waterfall creek water at the new treatment plant. This source does require pumping the water to all three storage tanks though. This system is reaching its' lifespan and will need repairs, maintenance or replacement for future reliable use as a backup water source and potential future town buildout.

Table 1: Groundwater Supply Information

Water System Facility Name	Water System Facility Number	Yield (gpm)	Year Installed
Lower Spring	157600-003	40	1991
Upper Spring	157600-004	40	1991

Table 2: Surface Water Supply Information

Water System Facility Name	Water System Facility Number	Surface Water Source	Constructed Date
Waterfall Creek Intake	157600-006	Waterfall Creek	2012

Figure 5: Town of Ophir's raw water intake off Waterfall Creek

Figure 6: Waterfall Canyon

Water Supply Demand Analysis

The Town of Ophir serves an estimated 76 connections and approximately 182 residents in the service area annually. The water system has the current capacity to produce an estimated 90,000 gallons per day. Current estimates indicate that the average daily demand is approximately 8,200 gallons per day, and that the average peak daily demand is approximately 16,000 gallons per day. Using these estimates, the water system has a surplus average daily demand capacity of 80,000 gallons per day and a surplus average peak daily demand capacity of 74,000 gallons per day. These estimates do not take into consideration seasonal variables and other factors that could affect the amount of raw water available for treatment and customer needs.

Based on the estimates above, the Town of Ophir has determined that if the primary Waterfall Creek water source becomes disabled for an extended period of time due to contamination, the Town of Ophir may not be able to meet the average nor peak daily demands of its customers. This is determined due to the fact the secondary water source, Warner Springs, lifespan is being reached and will need to be repaired, maintained or replaced. And in the event that both water sources become disabled for an extended period of time, the Town of Ophir will not be able to meet the daily demands of its customers.

The ability of Town of Ophir to meet either of these demands for an extended period of time is also affected by the amount of treated water the water system has in storage at the time a water source(s) becomes disabled., The Town of Ophir's water storage capacity should be increased to adequately address water treatment production in the event of system failure and to provide for adequate fire-fighting capabilities.

Town of Ophir recognizes that potential contamination of its groundwater source(s) could result in having to treat the groundwater and/or abandon the water source if treatment proves to be ineffective

or too costly. To understand the potential financial costs associated with such an accident, the Town of Ophir estimates that it could cost at a minimum $60,000 in today's dollars to replace one of its water sources (i.e., replacement of the intake structure and the associated infrastructure), but could exceed $1,000,000 in the event of a catastrophic contamination or failure. Treatment costs, which can vary depending on the type of contaminant(s) that need(s) to be treated, were not included in this estimate. Additionally, if a water source needs to be abandoned in its entirety, the Town of Ophir could very likely be in a cost prohibitive situation to seek other water source alternatives.

The potential financial and water supply risks related to the long-term disablement of one or more of the community's water sources are a concern to the Steering Committee. As a result, the Steering Committee believes the development and implementation of a source water protection plan for Town of Ophir can help to reduce the risks posed by potential contamination of its water source(s). Additionally, the Town of Ophir has developed an emergency response plan or contingency plan (Appendix C: Contingency Plan) to coordinate rapid and effective response to any emergency incident that threatens or disrupts the community water supply.

SOURCE WATER PROTECTION PLAN DEVELOPMENT

The Colorado Rural Water Association's (CRWA) Source Water Protection Specialist, Kimberly Mihelich, helped facilitate the source water protection planning process. The goal of the CRWA's Source Water Protection Program is to assist public water systems in minimizing or eliminating potential risks to drinking water supplies through the development and implementation of Source Water Protection Plans.

The source water protection planning effort consisted of a series of individual meetings and one public planning workshop. Information discussed at the meetings helped the Town of Ophir develop an understanding of the issues affecting source water protection for the community. The Steering Committee then made recommendations for best management practices to be incorporated into the Source Water Protection Plan. In addition to the planning meetings, data and other information pertaining to Source Water Protection Area was gathered via public documents, internet research, phone calls, emails, and field trips to the protection area. A summary of the meetings is represented below.

Table 3: Planning Meetings

Date	Purpose of Meeting
July 28, 2016	Logistics Planning Meeting with CRWA & Town of Ophir – Review of the State's Source Water Assessment for Town of Ophir. Develop and review list of stakeholders Set date for SWPP Planning Workshop and develop draft agenda.
September 20, 2016	SWPP Planning Workshop – Presentation on the process of developing a Source Water Protection Plan. Review of the State's Source Water Assessment Report for the Town of Ophir. Presentation on Ophir's drinking water sources and Source Water Protection Areas. Identify & discuss potential sources of contamination and assess risk level. Discussion on BMPs in place or needed for each potential source of contamination. Prioritize potential sources of contamination.
October 21, 2016	SWPP Conference Call – Review Best Management Practices. Prioritize potential sources of contamination.
February 17, 2017	SWPP Conference Call – Review draft SWPP
March 25, 2017	SWPP Conference Call – Finalize draft SWPP

Stakeholder Participation in the Planning Process

Local stakeholder participation is vitally important to the overall success of Colorado's Source Water Assessment and Protection (SWAP) program. Source water protection was founded on the concept that informed citizens, equipped with fundamental knowledge about their drinking water source and the threats to it, will be the most effective advocates for protecting this valuable resource. Local support and acceptance of the Source Water Protection Plan is more likely when local stakeholders have actively participated in its development.

The Town of Ophir's source water protection planning process attracted interest and participation from twelve stakeholders including local citizens and landowners, private businesses, water operators, local

and state governments, and agency representatives. A planning workshop was held on September 20, 2016 at the Ophir Town Hall in Ophir, Colorado to encourage local stakeholder participation in the planning process. Stakeholders were notified of meetings via letters, emails, and phone calls.

A Steering Committee to help develop the source water protection plan was formed from the stakeholder group. The Steering Committee's role in the source water protection planning process was to advise the Town of Ophir in the identification and prioritization of potential contaminant sources as well as management approaches that can be voluntarily implemented to reduce the risks of potential contamination of the untreated source water. All Steering Committee members attended at least one meeting and contributed to planning efforts from their areas of experience and expertise. Their representation provided diversity and led to a thorough Source Water Protection Plan. The Town of Ophir and the Colorado Rural Water Association are very appreciative of the participation and expert input from the following participants.

Table 4: Stakeholders and Steering Committee Members

Stakeholder	Title	Affiliation	Steering Committee Member
Randy Barnes	Town Manager	Town of Ophir	X
Corinne Platt	Mayor	Town of Ophir	X
Patrick Drew	Water Specialist	Town of Ophir	X
Matthew Zumstein	District Ranger	US Forest Service	X
Jennifer Dinsmore	Emergency Manager Coordinator	San Miguel County	X
Terri Lamers	County Commissioner Candidate	San Miguel County	X
Lynn Padgett	Government Affairs & Natural Resources	San Miguel County	X
John Bennett	District Fire Chief	Telluride Fire Protection District	X
Sonja Allen	Ophir Representative	San Miguel Watershed Coalition	X
Elizabeth Suffings	Program Coordinator	San Miguel Watershed Coalition	X
Leigh Sullivan	Water Specialist	Town of Ophir/San Miguel Environmental Services/RiverWatch	X
Chris Hazen	Executive Director	San Miguel Conservation Foundation	X

Development and Implementation Grant

The Town of Ophir has been awarded a $5,000 Development and Implementation Grant from the Colorado Department of Public Health and Environment (CDPHE). This funding is available to public water systems and representative stakeholders committed to developing and implementing a source water protection plan. A one to one financial match (cash or in-kind) is required. The Town of Ophir was

approved for this grant in March 2016, and it expires on March 10, 2018. The Town of Ophir intends on using the funds to implement management approaches that are identified in this Plan.

Source Water Assessment Report Review

The Town of Ophir has reviewed the Source Water Assessment Report along with the Steering Committee. These Assessment results were used as a starting point to guide the development of appropriate management approaches to protect the source waters of Town of Ophir from potential contamination. A copy of the Source Water Assessment Report for Town of Ophir can be obtained by contacting the Town of Ophir or by downloading a copy from the CDPHE's SWAP program website located at: http://www.colorado.gov/cs/Satellite/CDPHE-WQ/CBON/1251596793639.

Defining the Source Water Protection Area

A source water protection area is the surface and subsurface areas within which contaminants are reasonably likely to reach a water source. The purpose of delineating a source water protection area is to determine the recharge area that supplies water to a public water source. Delineation is the process used to identify and map the area around a pumping well that supplies water to the well or spring, or to identify and map the drainage basin that supplies water to a surface water intake. The size and shape of the area depends on the characteristics of the aquifer and the well, or the watershed. The source water assessment area that was delineated as part of the Town of Ophir's Source Water Assessment Report provides the basis for understanding where the community's source water and potential contaminant threats originate, and where the community has chosen to implement its source water protection measures in an attempt to manage the susceptibility of their source water to potential contamination.

After carefully reviewing their Source Water Assessment Report and the CDPHE's delineation of the Source Water Assessment Areas for each of the Town of Ophir's sources, the Steering Committee chose to modify them before accepting them as their Source Water Protection Areas for this Source Water Protection Plan. The Steering Committee agreed that the delineation for Waterfall Creek was accurate. However, they decided to expand the Warner Springs SWPA to include the Spring Gulch drainage as well as expand Zone 1 of the Warner Springs SWPAs around the entire spring (500 ft. radius). A 100-foot buffer zone around the pipeline from Waterfall Creek to their treatment facility was also added to the SWPAs.

The Town of Ophir's Source Water Protection Areas are defined as:

Warner Springs SWPA:

1. **Zone 1** is defined as a 500-foot radius around the spring collection boxes.
2. **Zone 2** is made up by the Warner Springs and Spring Gulch watershed boundaries.

Waterfall Creek SWPA:

1. **Zone 1** is defined as a 1,000-foot-wide band on either side of the stream.
2. **Zone 2** extends 1/4 mile beyond each side of the boundary of zone 1 (2,320 feet from the stream).
3. **Zone 3** is made up by the remainder of the SWAA area up to the Waterfall Creek watershed boundary.

The Source Water Protection Areas are illustrated in the following maps:

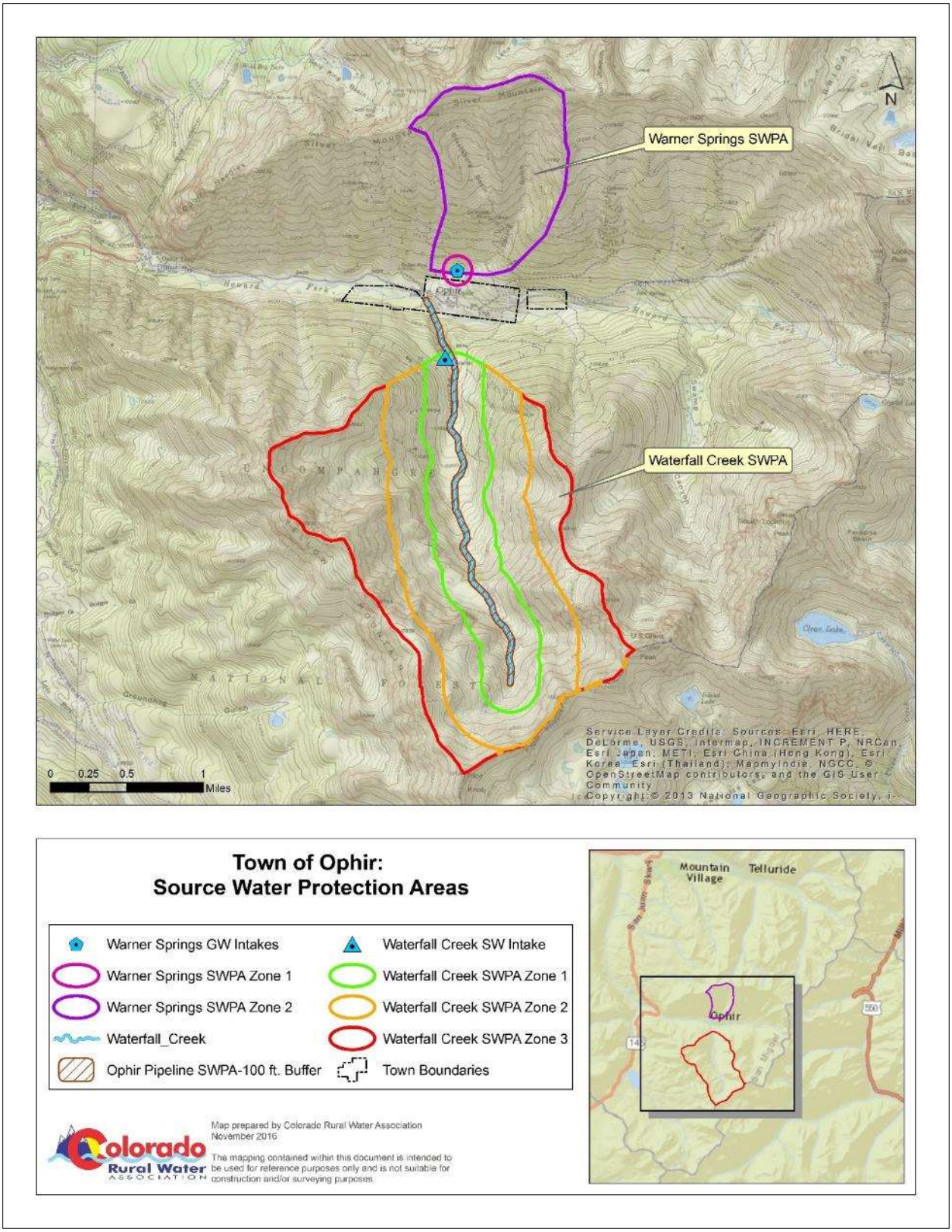

Figure 7: Town of Ophir's Source Water Protection Areas

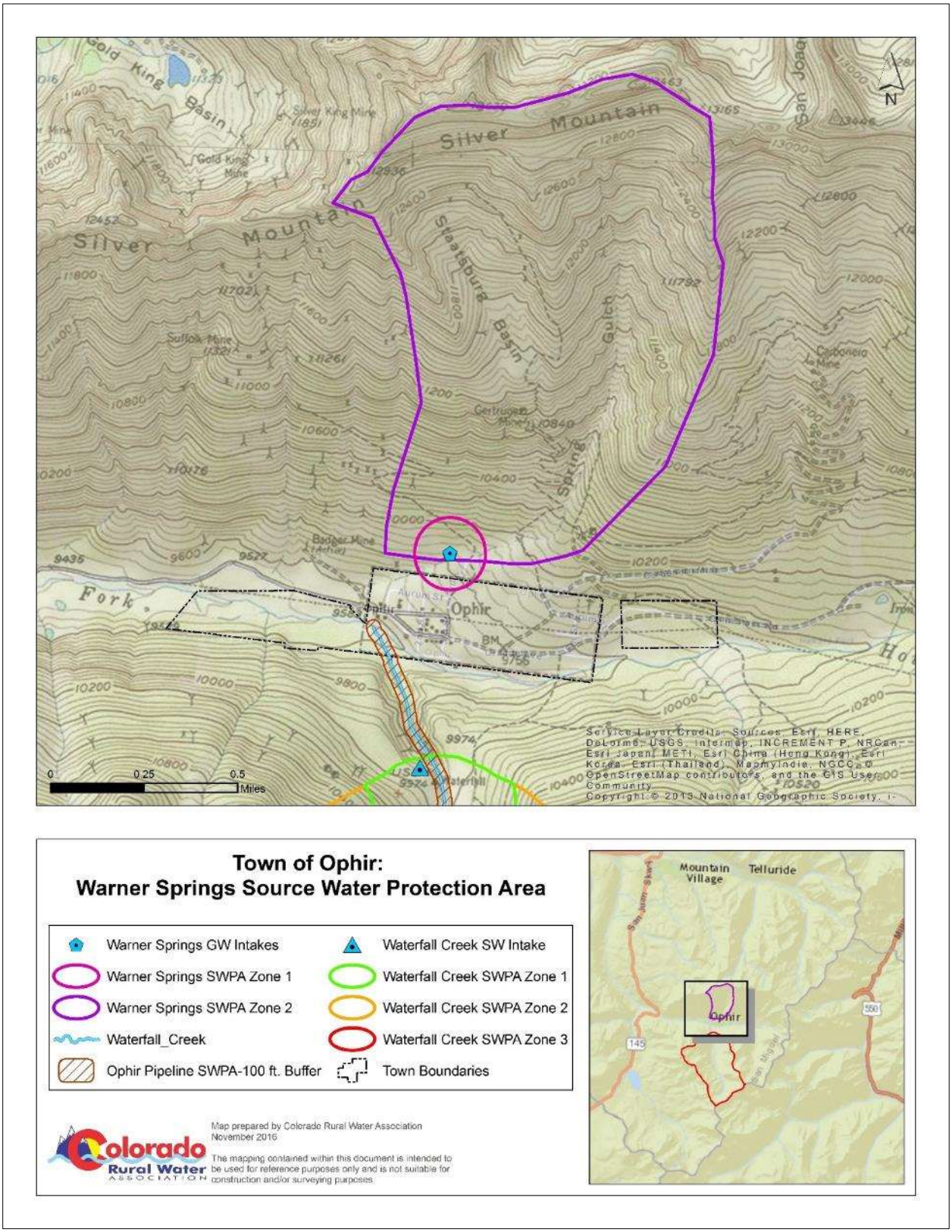

Figure 8: Town of Ophir's Warner Springs Source Water Protection Area

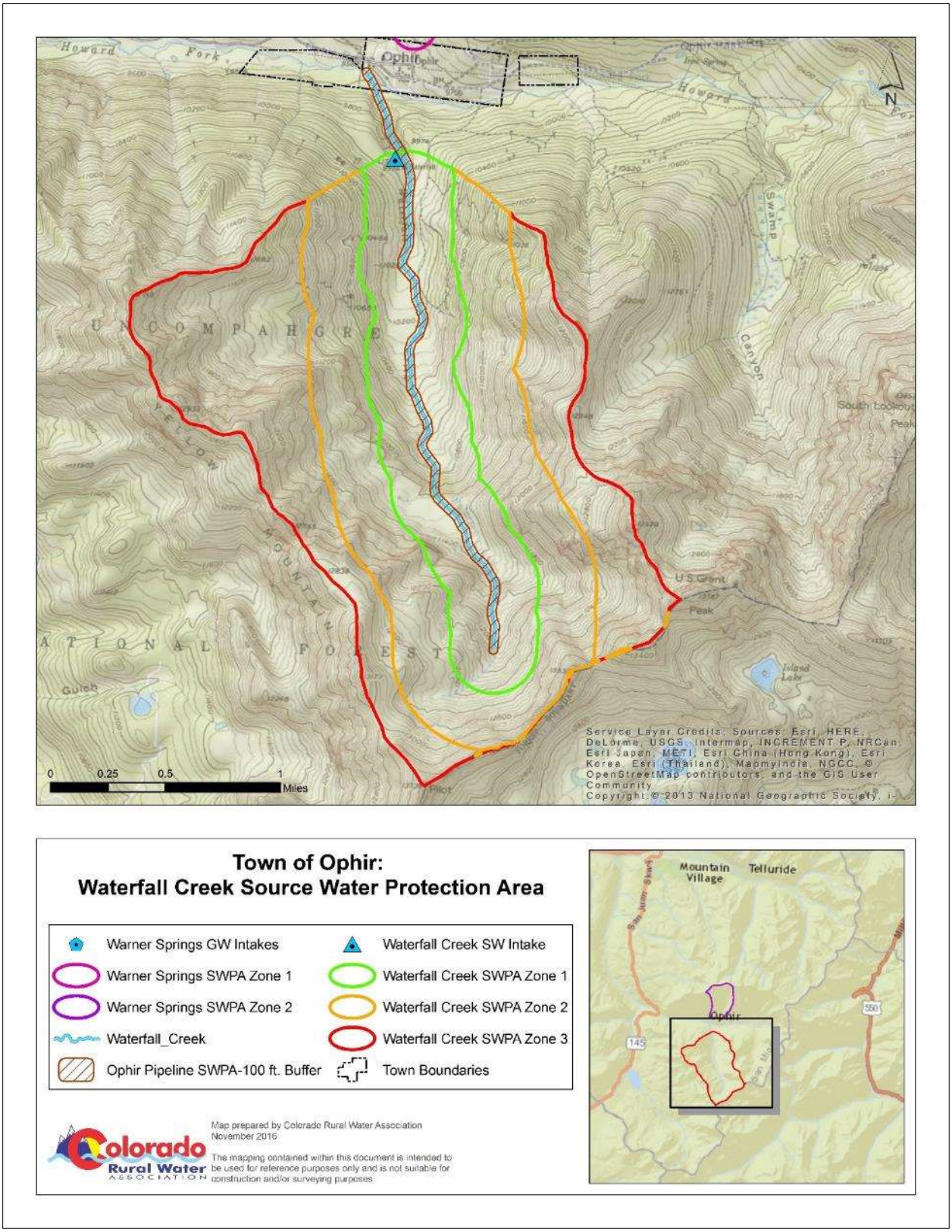

Figure 9: Town of Ophir's Waterfall Creek Source Water Protection Area

Inventory of Potential Contaminant Sources and Other Issues of Concern

In 2001 – 2002, as part of the Source Water Assessment Report, a contaminant source inventory was conducted by the Colorado Department of Public Health and Environment to identify selected potential sources of contamination that might be present within the source water assessment areas. Discrete and dispersed contaminant sources were inventoried using selected state and federal regulatory databases, land use / land cover and transportation maps of Colorado. The contaminant inventory was completed by mapping the potential contaminant sources with the aid of a Geographic Information System (GIS).

The Town of Ophir was asked, by CDPHE, to review the inventory information, field-verify selected information about existing and new contaminant sources, and provide feedback on the accuracy of the inventory. Through this Source Water Protection Plan, the Town of Ophir is reporting its findings to the CDPHE.

After much consideration, discussion, and input from local stakeholders, the Town of Ophir and the Steering Committee have developed a more accurate and current inventory of contaminant sources located within the Source Water Protection Area and other issues of concern that may impact the Town of Ophir's drinking water sources.[1] In addition to the discrete and dispersed contaminant sources identified in the contaminant source inventory, the Steering Committee has also identified other issues of concern that may impact the Town of Ophir's drinking water sources (see Table 5: Potential Sources of Contamination and Issues of Concern Prioritization Table). Upon completion of this contaminant source inventory, the Town of Ophir has decided to adopt it in place of the original contaminant source inventory provided by the CDPHE.

Priority Strategy of Potential Contaminant Sources and Other Issues of Concern

After developing a contaminant source inventory and list of issues of concern that is more accurate, complete, and current, the Town of Ophir prioritized each item to guide the implementation of the best management practices outlined in this Source Water Protection Plan (see Table 6: Source Water Protection Best Management Practices). The prioritization ranking of each potential contaminant source or other issue of concern factored in the following criteria (as described below): the level of risk, the water system control, and the best management practices associated with each item.

1. **Risk** – The level of risk for each contaminant source is a measure of the water source's potential exposure to contamination. When prioritizing, a water system may assign a higher priority ranking to a potential contaminant source that has a higher risk level than one of lower risk level. The Town of Ophir utilized CRWA's *SWAP Risk Assessment Matrix* (Appendix D), which calculates the level of risk by estimating the following:

    - **Impact to the Public Water System** – The risk to the source waters increases as the impact to the water system increases. The impact is determined by evaluating the human health concerns and potential volume of the contaminant source. CDPHE developed information tables to assist with this evaluation (Appendices E-H). The

[1] The information contained in this Plan is limited to that available from public records and the Town of Ophir at the time that the Plan was written. Other potential contaminant sites or threats to the water supply may exist in the Source Water Protection Area that are not identified in this Plan. Furthermore, identification of a site as a "potential contaminant site" should not be interpreted as one that will necessarily cause contamination of the water supply.

following descriptions provide a framework to estimate the impact to the public water system.

- **Catastrophic** - irreversible damage to the water source(s). This could include the need for new treatment technologies and/or the replacement of existing water source(s).
- **Major** - substantial damage to the water source(s). This could include a loss of use for an extended period of time and/or the need for new treatment technologies.
- **Significant** - moderate damage to the water source(s). This could include a loss of use for an extended period of time and/or the need for increased monitoring and/or maintenance activities.
- **Minor** - minor damage resulting in minimal, recoverable, or localized efforts. This could include temporarily shutting off an intake or well and/or the issuance of a boil order.
- **Insignificant** - damage that may be too small or unimportant to be worth consideration, but may need to be observed for worsening conditions. This could include the development of administrative procedures to maintain awareness of changing conditions.

- **Probability of Impact** – The risk to the source waters increases as the relative probability of damage or loss increases. The probability of impact is determined by evaluating the number of contaminant sources, the migration potential or proximity to the water source, and the historical data. The following descriptions provide a framework to estimate the relative probability that damage or loss would occur within one to ten years.
  - **Certain**: >95% probability of impact
  - **Likely**: >70% to <95% probability of impact
  - **Possible**: >30% to <70% probability of impact
  - **Unlikely**: >5% to <30% probability of impact
  - **Rare**: <5% probability of impact

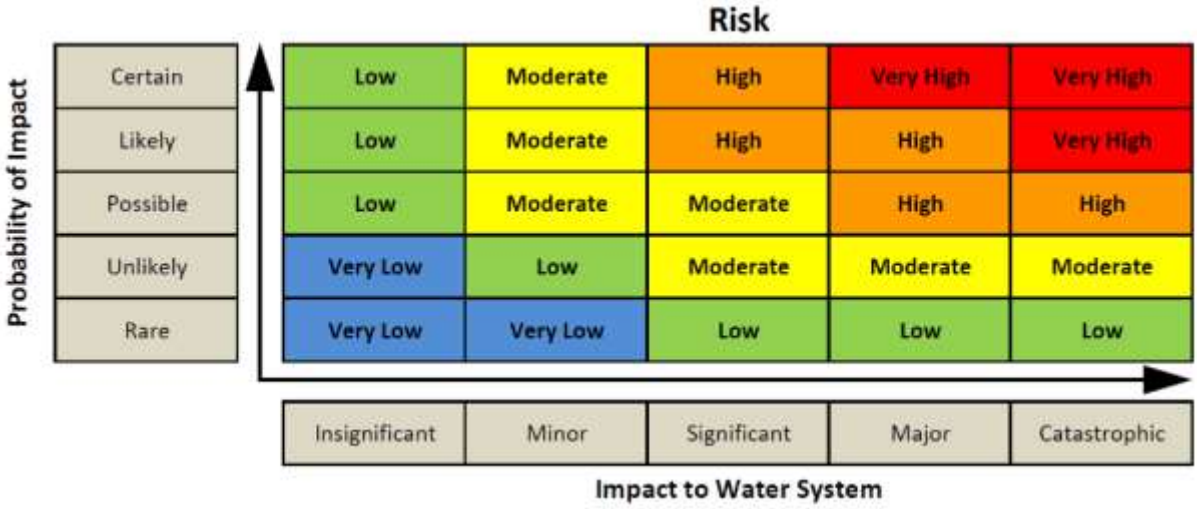

Figure 10: CRWA's SWAP Risk Assessment Matrix

2. **Control** – The level of water system control describes the ability of the water system to take measures to prevent contamination or minimize impact. A potential contaminant source that falls within a water system's jurisdiction (i.e. direct control), may be of higher priority since they can take direct measures to prevent contamination or minimize the impact.
    - **Direct Control** – The water system can take direct measures to prevent.
    - **Indirect Control** – The water system cannot directly control the issue, but can work with another person or entity to take measures to prevent.
    - **No Control** – The PSOC or issue of concern is outside the control of the public water system and other entities.

3. **Best Management Practices** – BMPs are the actions that can be taken within the Source Water Protection Area to help reduce the potential risks of contamination to the community's source waters. The prioritization of the potential contaminant sources or issues of concern may be affected by the feasibility of implementing the BMPs that the Town of Ophir developed (Table 6: Source Water Protection Best Management Practices).

The Town of Ophir and Steering Committee ranked the potential contaminant source inventory and issues of concern in the following way:

Table 5: Potential Contaminant Sources and Issues of Concern Prioritization Table

Potential Contaminant Source or Issue of Concern	Proximity (SWPA Zone)	Impact to Water System (Insignificant, Minor, Significant, Major, Catastrophic)	Probability of Impact (Rare, Unlikely, Possible, Likely, Certain)	Risk (Very Low, Low, Intermediate, High, Very High)	Priority Ranking
Security/vandalism	Zone 1 (both SWPAs)	Catastrophic	Rare	Low	High
Forest health (beetle kill/aspen decline	All SWPAs	Significant	Possible	Moderate	High
Infrastructure failure	Zone 1 (both SWPAs)	Major	Likely	High	High
Abandoned mines	All SWPAs	Significant	Possible	Moderate	High
Misc. water quality issues (i.e. airborne contaminants, etc.)	Waterfall Creek SWPA	Insignificant	Certain	Low	High
Drought	All SWPAs	Significant	Possible	Moderate	High
Public education	n/a	n/a	n/a	n/a	High
Catastrophic wildfire	All SWPAs	Significant	Unlikely	Moderate	Medium
Severe weather	All SWPAs	Significant	Rare	Low	Medium
Recreation impacts (unmanaged/illegal activities)	All SWPAs	Minor	Likely	Moderate	Medium

Potential Contaminant Source or Issue of Concern	Proximity (SWPA Zone)	Impact to Water System (Insignificant, Minor, Significant, Major, Catastrophic)	Probability of Impact (Rare, Unlikely, Possible, Likely, Certain)	Risk (Very Low, Low, Intermediate, High, Very High)	Priority Ranking
Emergency incidents & response	All SWPAs	Minor	Rare	Very Low	Medium
Wildlife	All SWPAs	Insignificant	Certain	Low	Low
Future land use/development	All SWPAs	Insignificant	Unlikely	Very Low	Low

DISCUSSION OF POTENTIAL CONTAMINANT SOURCES AND ISSUES OF CONCERN

The following section provides a brief description of potential contaminant sources and issues of concern that have been identified in this plan, describes the way in which they threaten the water source(s) and outlines best management practices.

Security/Vandalism

Priority Ranking: High

Although there have been no major acts of vandalism to the Town of Telluride's water supplies, this is still a concern for the Steering Committee. While the probability for these acts to occur is rare, this remains a concern, as the impacts could be major. Water infrastructure could be targeted directly, or water can be contaminated through the introduction of poisonous chemicals or disease-causing biological agents (Gleick, 2006). A security gate is installed at the entrance to the Waterfall Creek intake in an effort to restrict access, but the Steering Committee recommends installing signage and fencing and repairing or maintaining security gates to the area as well as installing locks and security cameras at or near intakes and storage tanks.

Security Best Management Practices Recommendations

1. Install or replace signage at strategic points within the Town of Ophir's SWPAs about source water protection.
    a. Request Source Water Protection Road Signs from CDPHE.
    b. Develop signage with local contact info to display below CDPHE's signs.
    c. Install Source Water Protection Road Signs.
2. Install, repair, and maintain fencing, security gates, locks, and/or security camera at/near intakes and storage tanks.

Forest Health

Priority Ranking: High

The overly dense forests throughout the Rocky Mountains are concentrated with older age classes of trees that lack diversity in age and size. This lack of diversity, along with intense competition for resources has left many forest stands vulnerable to insect and disease attacks and widespread damage. The US Forest Service Rocky Mountain Region 2 has conducted aerial and ground surveys annually over western conifer and aspen forest to detect damage caused by defoliating insects (USDA Forest Service , 2014).

According to the 2015 Forest Health Conditions Report for the Grand Mesa, Uncompahgre, & Gunnison (GMUG) National Forest Report, the 2015 Aerial Detection Survey indicated that spruce beetle, mountain pine beetle, Douglas-fir beetle activity has decreased. Western balsam bark beetles are currently active in high elevation spruce/fir stands throughout the forest, and there is currently a significant outbreak of round headed pine beetle attacking mature ponderosa pine on the San Juan National Forest. A small amount of roundheaded pine beetle activity has been noted on the southern portions of the Norwood Ranger District. Western spruce budworm activity has increased dramatically, especially in the Ouray and Norwood Ranger Districts. In addition, aspen discoloration and defoliation was widespread in the GMUG forest, mostly due to the Marssonina leaf blight, the Western Tent Caterpillar, and the Large Aspen Tortix (USDA Forest Service, 2015).

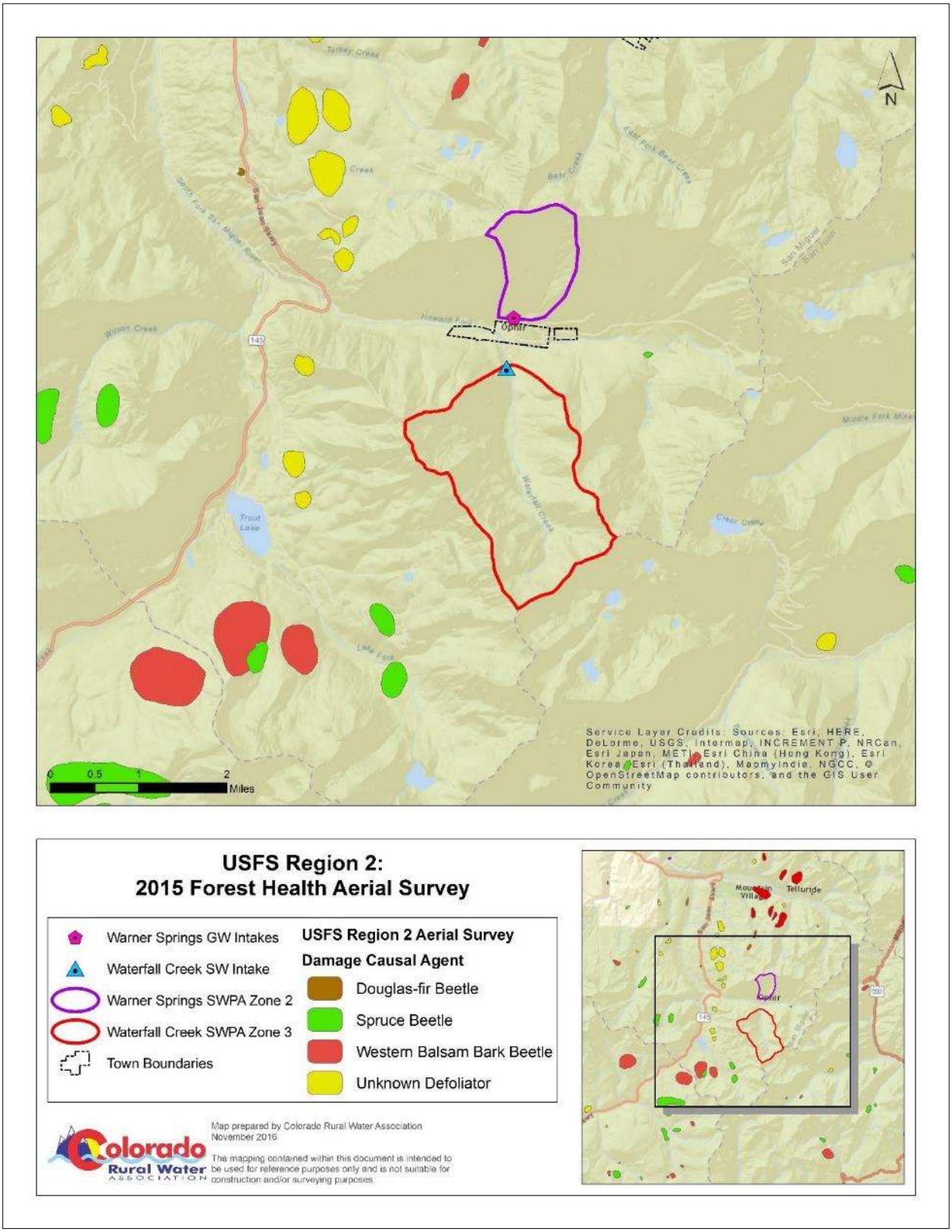

Figure 11: USFS Region 2 2015 Aerial Detection Survey results around the Town of Ophir's SWPAs (USDA Forest Service, 2016)

The US Department of Agriculture (USDA) Strategic Plan for FY 2010–2015 targeted the restoration of watershed and forest health as a core management objective of the national forests and grasslands. To achieve this goal, the USFS, agency of USDA, was directed to restore degraded watersheds. The Watershed Condition Framework (WCF) was developed as a comprehensive approach for classifying watershed conditions, proactively implementing integrated restoration in priority watersheds on national forests and grasslands, and tracking and monitoring outcome-based program accomplishments for performance accountability. The Howard Fork sub-watershed which encompasses the Town of Ophir's Source Water Protection Areas was evaluated using the WCF and was classified as "Functioning Properly". Watershed conditions were classified based on a 12-indicator model, which identified the following factors: (1) Water Quality, (2) Water Quantity, (3) Aquatic Habitat, (4) Aquatic Biota, (5) Riparian/Wetlands Vegetation, (6) Roads & Trails, (7) Soils, (8) Fire Regime or Wildfire, (9) Forest Cover, (10) Rangeland Vegetation, (11) Terrestrial Invasive Species, and (12) Forest Health (USDA Forest Service, May 2011).

Forest Health Best Management Practices Recommendations

1. Share electronic and hard copies of the SWPP and GIS shapefiles of the SWPA with the USFS, CSFS, San Miguel County, and Private Landowners.
    a. Gather contact information & create mailing list for distribution;
    b. Utilize CRWA's "SWPP Distribution Letter" template to develop a cover letter for SWPP distribution;
    c. Print hard/CD copies of SWPP; print CDs with SWPA GIS shapefiles;
    d. Distribute & SWPP Distribution Cover Letter along with copy of Town of Ophir' SWPP and SWPA GIS shapefiles.
2. Support adaptive forest management in conjunction with regional entities with the US Forest Service
3. Continue to monitor water sources for impacts cause by decreased forest health.
4. Explore possible grants through West Region Wildfire Council for further mitigation & education.

Infrastructure Failure

Priority Ranking: High

The nation's drinking water infrastructure—especially the underground pipes that deliver safe water to America's homes and businesses— is aging and in need of significant reinvestment. Like many of the roads, bridges, and other public assets on which the country relies, most buried drinking water infrastructure was built 50 or more years ago, in the post-World War II era of rapid demographic change and economic growth. water treatment and delivery systems provide public health protection, fire protection, economic prosperity and the high quality of life we enjoy (American Water Works Association).

According to the 2011 Drinking Water Infrastructure Needs Survey and Assessment, the U.S. Environmental Protection Agency project that it will cost $384 billion over 20 years to maintain the nation's existing drinking water system, which will require tens of thousands of miles of replacement pipe and thousands of new or renovated plants (The Associated Press, 2015).

The Town of Ophir's infrastructure needs are no different. Many of their pipes are aboveground and subject to freezing and bursting. If pipelines break or pressure within the pipelines is decreased, they can contaminate treated water already in the delivery system. In addition, extended power outages could cause a decrease or loss in water supply to the Town. Ophir has no backup generator that would

be necessary to treat and delivery water, and would have to rely on alternative water supplies in the event of an extended power outage.

Infrastructure Failure Best Management Practices Recommendations

1. Continue to conduct maintenance on Town of Ophir's water infrastructure.
2. Develop a long-term maintenance plan for the Town of Ophir's water infrastructure.
3. Update the Town of Ophir Emergency Operations Plans to include infrastructure failure as a criterion.
4. In the event of infrastructure failure, utilize Code Red and mass email to alert residents.

Abandoned Mines

Priority Ranking: High

Mining practices during the early days allowed mine owners to simply abandon mines without consideration of the impact on streams, water quality, slope stability and safety. Many old mining properties contain abandoned mine workings, mine waste and/or mill tailings. Active and inactive mining operations have a potential to contaminate drinking water supplies from either point source discharges (i.e. mine drainage tunnels or flowing adits) or nonpoint source discharges from run-off over waste rock or tailing piles. Acidic, metal-laden water emanating from inactive mines and waste rock piles has a potential to impair aquatic life and to a lesser degree threaten human drinking water.

The Colorado Division of Reclamation, Mining, and Safety (DRMS) regulates mining and prospecting operations in the state of Colorado under the auspices of the Colorado Mined Land Reclamation Act and the Hard Rock/Metal Mining Rules and Regulations of the Mined Land Reclamation Board. The Division is responsible for mineral and energy development, policy, and regulation and planning. One of their primary objectives is to review mining permit applications and to inspect mining operations to make sure that regulations are being followed. The USFS works closely with the Colorado Division of Reclamation and Mining Safety to monitor high-risk mine sites.

During the years 1991 through 1999, the Colorado Geological Survey completed an inventory of abandoned mine lands on National Forest System lands within Colorado (Colorado Geological Survery, n.d.). Within the Source Water Protection Areas, there are a few mine inventory areas, but their environmental hazard ratings are shown to be "slight" or "none" (see Figure 12 below). There are other mine sites near Ophir's SWPAs, however the Town of Ophir is not currently aware of any impairment to their drinking water sources and continues to work with other agencies to observe and monitor for any potential contamination.

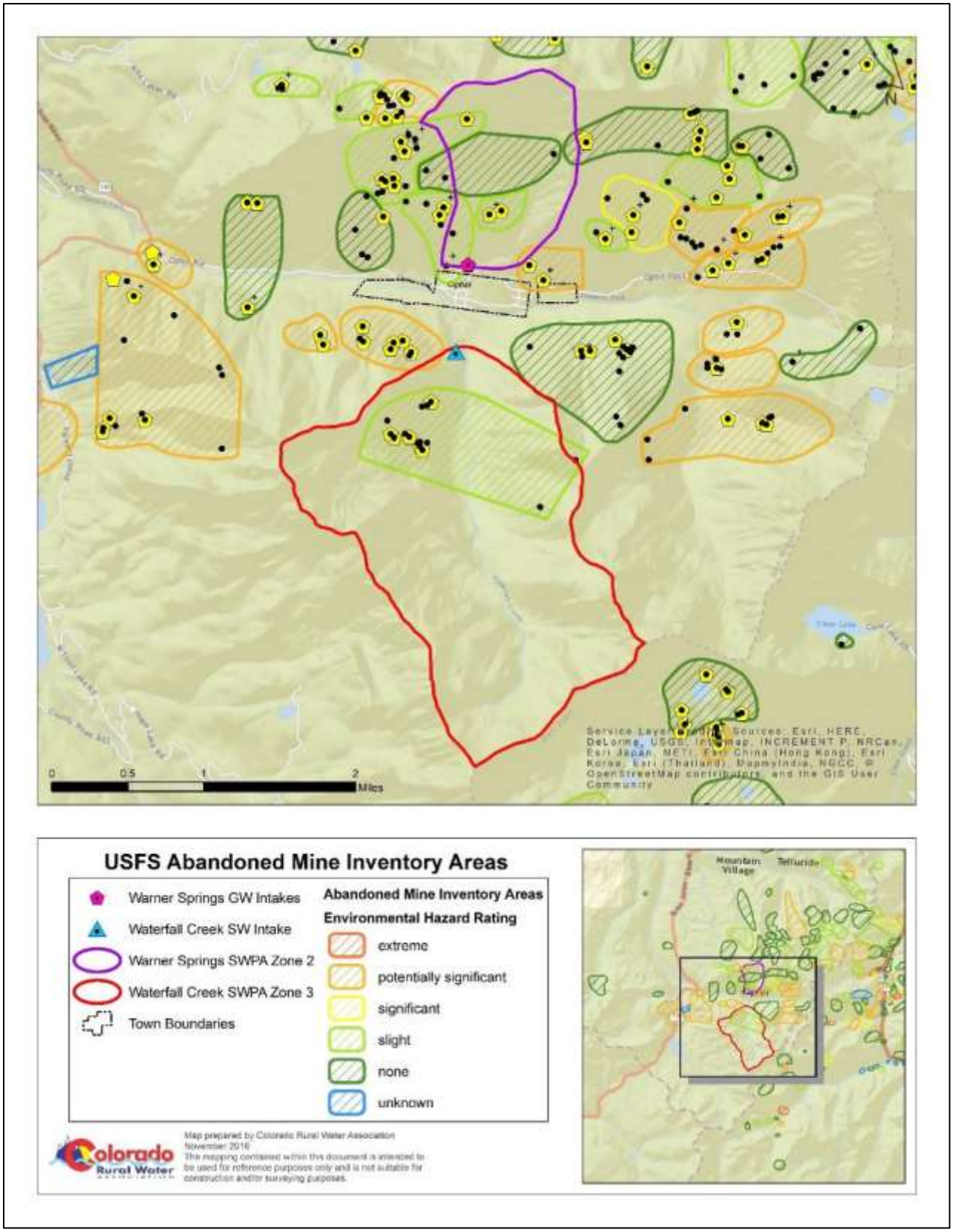

Figure 12: Historical mine inventory areas within the Town of Ophir's SWPAs

Abandoned Mines Best Management Practices Recommendations

1. Share electronic and hard copies of the Town of Ophir' SWPP and GIS shapefiles/maps of the SWPAs with CDPHE, DRMS, CDNR, USFS, EPA, San Miguel Watershed Coalition, San Miguel Conservation Foundation, and Private Landowners and request to be notified of mine blowouts and spill events within SWPAs in a timely manner.
    a. Gather contact information & create mailing list for distribution;
    b. Utilize CRWA's "SWPP Distribution Letter" template to develop a cover letter for SWPP distribution;
    c. Print hard copies/Email SWPP; Email SWPA GIS shapefiles;
    d. Distribute SWPP Distribution Cover Letter along with copy of Town of Ophir' SWPP and SWPA GIS shapefiles.
2. Share Emergency Notification Cards with CDPHE, DRMS, CDNR, USFS, EPA, San Miguel Watershed Coalition, San Miguel Conservation Foundation, and Private Landowners.
    a. Gather contact information & create mailing list for distribution;
    b. Develop Emergency Notification Cards that includes maps of the SWPAs and water system contact information;
    c. Print copies of Emergency Notification Cards;
    d. Mail/Distribute Emergency Notification Cards.
3. Update Town of Ophir Emergency Response Plan to include appropriate agencies as it pertains to abandoned mines
    a. Develop notification procedures with organizations that might first notice the problems (e.g. San Miguel County, Telluride Fire Department, USFS, and/or Private Landowners.
    b. Develop and maintain an effective contact list to report and collaborate on any issues that may arise.
    c. Report any issues or threats that arise to the appropriate agencies.
4. Coordinate water quality studies between the Town of Ophir, San Miguel County, USFS, San Miguel Watershed Coalition, Mountain Studies Entities, and any other relevant entities. Share information on water quality studies between pertinent agencies and entities.

Miscellaneous Water Quality Issues

Priority Ranking: High

In addition to the specific issues of concern identified in this Plan, the Steering Committee is also concerned about miscellaneous issues that may affect the water quality of the Town of Ophir's source waters, including but not limited to dust on snow, regional air pollution, and nitrate deposition.

Nitrate Deposition

In a 2001 study conducted by the Institute of Arctic and Alpine Research and Department of Geography at the University of Colorado, elevated inorganic nitrogen levels in Waterfall Canyon were found to be higher than what is expected to naturally occur. Power plant emissions from the Four Corners region are most likely the sort of a major portion of elevated inorganic nitrogen in wetfall to the San Juan Mountains (Williams & Manthorne, 2001). That much of the nitrogen-laden water is falling in the high mountains of Colorado is a serious concern. The mountains are more fragile, have a shorter growing season and less soil, and high altitude plants are adapted to the lower levels of nitrogen. Thus, problems associated with increased nitrogen deposition show up more quickly and more acutely in the mountains, than in the lower elevation grasslands and forests (The Watch, 2004).

Regional Air Pollution

Air quality issues in the Four Corners region prompted the formation of the Four Corners Air Quality Task Force that convened November 2005 to discuss the impacts that oil and gas production, existing and planned coal-fired power plants, growth and other factors are having on air quality in the Four Corners Region. The task force concluded a two-year effort in November 2007 with the finalization of a report on a broad list of options for improving air quality in the region. The report is a resource for regulatory agencies to manage air quality impacts (Appendix I). The task force reconvenes periodically to check on progress (Four Corners Air Quality Task Force, 2007).

Dust on Snow

Dust accumulation on snow has increased since around 1850 due to western settlement. Grazing, agriculture, and resource exploration causes additional soil surface disturbances. In addition, the Four Corners region is aptly suited as a dust source because it is sparsely vegetated and sits in the path of spring storms. It also happens to be situated upwind of many high Rocky Mountain peaks, including the San Juan Mountains, that can act like windbreaks and cause millions of wafting particles to settle. Dust on snowpack helps hasten spring snow melt, which can cause the duration of snow cover to shorten by four to five weeks. This enables plants to soak up soil moisture sooner and increases evaporation, both of which sap additional water from the system, and also lengthens the fire season by helping to dry out fire fuels, and it precipitates stream and river torrents, presenting challenges to water managers (Guido, 2012).

Miscellaneous Water Quality Issues Best Management Practices Recommendations

1. Town of Ophir, San Miguel County, USFS, EPA, San Miguel Watershed Coalition, Mountain Studies Entities, and any other relevant entities. Share information on water quality studies between pertinent agencies and entities.
2. Refer to Center for Snow & Avalanche Studies' Colorado Dust-on-Snow Program to monitor for dust accumulation on snowpack.
3. Continue River Watch monitoring program.

Drought

Priority Ranking: High

Drought is an extended period of months or years when a region has a deficiency in its water supply whether surface or groundwater. When precipitation is reduced or deficient over an extended period of time, this shortage will be reflected in declining surface and groundwater levels. Although drought is a common natural phenomenon in Colorado, research indicates that observed temperature trends may have created conditions more favorable to droughts, or have exacerbated the impacts of droughts. In Colorado, temperatures have increased by approximately two degrees between 1997 and 2006. Climate models project Colorado will warm by four degrees by 2050. This, combined with a seasonal shift in precipitation, warmer spring temperatures, and increase evaporation rates, will result in an impact to Colorado's water resources (Colorado Water Conservation Board, 2008).

Drought conditions may result in both short term and long term impacts. In order to appropriately address and reduce drought-related impacts, it is imperative for municipal water providers throughout the state to anticipate the potential long-term impacts from drought and plan for the flexibility to address changes. The Colorado Water Conservation Board recommends that water providers develop a Drought Mitigation Plan to preserve essential public services and minimize the adverse effect of a water supply emergency. The drought plan would identify actions and procedures for responding to a drought-related water supply shortage before an actual water supply emergency occurs.

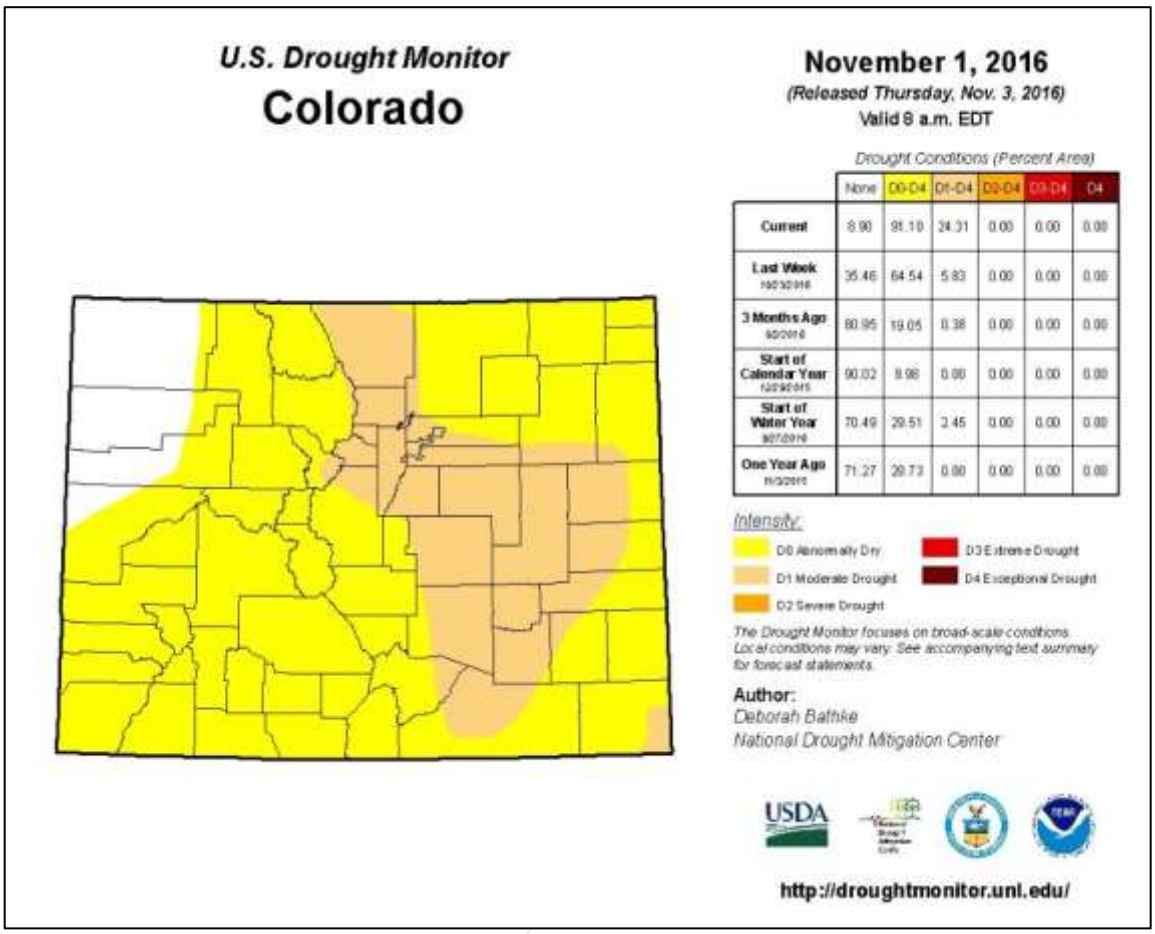

Figure 13: Drought conditions in Colorado from the November 1, 2016 U.S. Drought Monitor (Bathke, 2016)

Drought Best Management Practices Recommendations

1. Develop water conservation measures and conservation plan for Town of Ophir's water supplies.
2. Ensure Town of Ophir's water rights are well established.

Public Education

Priority Ranking: High

While public education is not a potential source of contamination, the Steering Committee believes that educating community members about source water protection efforts is essential to the prevention of surface and groundwater contamination. Public education can help community members understand the potential threats to their drinking water sources and motivate them to participate as responsible citizens to protect their valued resources.

Public Education Best Management Practices Recommendations

1. Post a copy of the SWPP on the Town of Ophir's website.
2. Install signage at strategic points within the Source Water Protection Area that explains the importance of source water protection.

3. Develop a brochure or flyer to distribute to community members that explains the importance of source water protection.

Catastrophic Wildfire

Priority Ranking: Moderate

A wildfire is unlikely to occur in the Town of Ophir's Source Water Protection Areas and surrounding lands, but if a large, hot fire did occur, it could have an impact on the Town of Ophir's source waters by removing vegetation and decreasing infiltration during rain events. This can result in soil erosion and sediment and ash pollution in drinking water. Large rain events can produce mudslides and debris flow capable of destroying water infrastructure and altering clarity and pH of the source waters.

Mitigating the wildfire danger in the SWPAs using fuel reduction techniques like tree thinning would only have a limited short-term benefit but is unlikely as the financial costs to do so are not feasible. In addition, access to the area with heavy equipment necessary for tree thinning or other fuel reduction techniques is very limited and not likely.

Wildfire/Storms/Aftermath Best Management Practices Recommendations

1. Refer to San Miguel County's Community Wildfire Protection Plan, San Miguel County All Hazards Mitigation Plan, & USFS Fuels Management Plan as a guide to assess and understand wildfire risk.
2. Share electronic and hard copies of the SWPP and GIS shapefiles of the SWPA with the USFS, San Miguel County, and Telluride Fire Protection District.
    a. Gather contact information & create mailing list for distribution;
    b. Utilize CRWA's "SWPP Distribution Letter" template to develop a cover letter for SWPP distribution;
    c. Print hard/CD copies of SWPP; print CDs with SWPA GIS shapefiles;
    d. Distribute & SWPP Distribution Cover Letter along with copy of Town of Ophir' SWPP and SWPA GIS shapefiles.
3. Share Emergency Notification Cards with the USFS, San Miguel County, and Telluride Fire Protection District, dispatch centers.
    a. Gather contact information & create mailing list for distribution;
    b. Develop Emergency Notification Cards that includes maps of the SWPAs and water system contact information;
    c. Print copies of Emergency Notification Cards;
    d. Mail/Distribute Emergency Notification Cards.
4. Become familiar with the Town of Ophir Emergency Operations Plan as it relates to wildfire
5. Perform wildfire mitigation around intakes within Zone 1 of SWPA in conjunction with USFS. Fuel mitigation around intakes within Zone 1 (in conjunction w/ USFS). Explore possible grants through West Region Wildfire Council for further wildfire mitigation & education.
6. Explore opportunities for increasing amount of water storage capacity.

Severe Weather

Priority Ranking: Moderate

Severe weather and natural disasters, other than drought and wildfire, which were discussed in previous sections, may occur in or near the Town of Ophir's SWPAs. The San Miguel County All Hazard Mitigation Plan has identified the following natural and manmade hazards that may occur in San Miguel County (San Miguel County , 2011):

Manmade Hazards

- Power Outages
- Critical Infrastructure Failure
- Technological Hazards
- Terrorism
- Transportation Accidents
- Hazardous Materials

Natural Hazards

- Avalanche
- Dam Failure
- Debris Flows
- Drought
- Earthquake
- Flooding
- Extreme Winter Weather
- Wildfire
- Natural Health Hazards
- Severe Weather

The Steering Committee is most concerned with floods occurring in or near the Town of Ophir's SWPAs. Flooding is one of the most common hazards in the United States, causing more damage than any other severe weather-related event. In San Miguel County, the flood season generally extends from late spring to fall. Snowmelt floods typically occur with rapid rises in temperature in May or June. Impacts to drinking water and wastewater utilities can include loss of power, damage to assets, and dangerous conditions for personnel. Often located in low lying areas, water and wastewater utilities are particularly vulnerable to flooding. Water and debris can inundate the facility, thereby damaging equipment and structures, and causing power outages. Such impacts can lead to various consequences including costly repairs, disruptions of services, and/or hazardous situations for personnel and public health advisories. (US Environmental Protection Agency, 2014).

Flooding depends on various factors including rainfall, topography, river-flow, drainage, and tidal-surge. The threat of flooding is based on the likelihood that such a flooding event will occur. The Federal Emergency Management Agency (FEMA) produces maps of a "100-year flood" (a flood event that has a one percent chance of occurring in a given year) and a more catastrophic "500-year flood" (a flood event that has a two tenths of a percent chance of occurring in a given year). (Federal Emergency Management Agency, 2015).

San Miguel County is extremely susceptible to riverine flooding given the steep mountainous terrain and the multitude of creeks and streams that eventually flow into the San Miguel River. Riverine flooding is defined as when a watercourse exceeds its "bank-full" capacity and is usually the most common type of flood event. Riverine or flash flooding generally occurs as a result of prolonged rainfall, or rainfall that is combined with soils already saturated from previous rain events. The amount of precipitation, precipitation intensity and density, soil type and moisture and vegetation all influence the likelihood and severity of a riverine flooding event. Riverine flooding can be worsened if debris blocks the flow of water, causing it to back up and then eventually surge (San Miguel County , 2011).

For more information about natural hazards in San Miguel County, refer to the San Miguel County All Hazard Mitigation Plan (Appendix J).

<u>Severe Weather Best Management Practices Recommendations</u>

1. Subscribe to San Miguel County's CodeRED Wireless Notification System in order to be alerted to severe weather events.
2. Monitor weather forecasts and other hazardous weather outlooks from NOAA. Enact the Town of Ophir's Emergency Response Plan when severe weather threatens water infrastructure.
3. Share electronic and hard copies of the SWPP and GIS shapefiles of the SWPA with San Miguel County; USFS; Telluride Fire Protection District.
    a. Gather contact information & create mailing list for distribution;
    b. Utilize CRWA's "SWPP Distribution Letter" template to develop a cover letter for SWPP distribution;
    c. Print hard/CD copies of SWPP; print CDs with SWPA GIS shapefiles;
    d. Distribute SWPP Distribution Cover Letter along with copy of Town of Ophir' SWPP and SWPA GIS shapefiles.
4. Share Emergency Notification Cards with the San Miguel County Office of Emergency Management.
    a. Gather contact information & create mailing list for distribution;
    b. Develop Emergency Notification Cards that includes maps of the SWPAs and water system contact information;
    c. Print copies of Emergency Notification Cards;
    d. Mail/Distribute Emergency Notification Cards.

Recreation Impacts

Priority Ranking: Moderate

There are many types of recreation that occurs on US Forest System lands within the Town of Ophir's Source Water Protection Areas including camping, hiking, biking, backcountry skiing, horseback riding, snowmobiling, and heli-skiing. Additionally, many of these activities are accompanied with dogs. Some undesirable impacts of recreation can include eroded soils, user-created unplanned roads, disrupted wetland ecosystems, as well as general habitat destruction and degraded water quality throughout forested lands. There has been no evidence of degradation to Ophir's drinking water sources and the Steering Committee considers impacts from recreation to be a moderate risk.

Recreation Best Management Practices Recommendations

1. Work with USFS and San Miguel County to install signage or post information about source water protection at entry points or trailhead in SWPA.
    a. Identify major recreational sites in SWPA;
    b. Request SWPA signage from CDPHE or develop other signage/outreach material;
    c. Install signage at recreational sites identified.
2. Keep updated on permit requirements on USFS lands in SWPA and work with USFS to disseminate information about source water protection to commercial users within SWPA
3. Request the locations of the Town of Ophir's SWPAs be included in the revised USFS GMUG Forest Service Plan.
4. Share information about the Town of Ophir' SWPP maps of the SWPAs with commercial users.
    a. Gather contact information & create mailing list for distribution;
    b. Utilize CRWA's "SWPP Distribution Letter" template to develop a cover letter to explain the SWPP;
    c. Print hard of the SWPAs;
    d. Distribute SWPP Distribution Cover Letter along with maps of the SWPAs.

5. Work with the USFS to identify system trails within the SWPAs that are sustainable, and close those that are not sustainable and/or maintainable.
6. Work with the USFS to maintain system trails within the SWPAs.
7. Share the Town of Ophir Travel Management Plan with the USFS and San Miguel County.
8. Continue to have travel management plans that restrict motor vehicle access and usage in source water protection areas in conjunction with the USFS and San Miguel County.

Emergency Incidents & Response

Priority Ranking: Moderate

While unlikely, emergency incidents such as recreational motor vehicle and helicopter accidents are a concern to the Steering Committee. Fuels, waste, and other hazardous chemicals such as crankcase oil, transmission, hydraulic, and brake fluid, and antifreeze may be released from vehicle or helicopter accidents and into source waters. Chemicals from accidents or spills are often diluted with water, potentially washing the chemicals into the soil and infiltrating into the groundwater or draining directly to surface water sources.

Local response for spills and accidents is from the Telluride Fire Protection District, the San Miguel County Sherriff's Department, and the San Miguel County Office of Emergency Management. Current best management practices in place for cleaning up spills include laying down absorbent material and damming off leaks/spills in an effort to not reach ditches and streambanks.

Emergency Incidence/Response Best Management Practices Recommendations

1. Share electronic and hard copies of the Town of Ophir' SWPP and GIS shapefiles/maps of the SWPAs with San Miguel County Sheriff's Office, Search & Rescue, San Miguel County Hazmat, Heli-skiing companies, and the National Transportation Safety Board (NTSB).
    a. Gather contact information & create mailing list for distribution;
    b. Utilize CRWA's "SWPP Distribution Letter" template to develop a cover letter for SWPP distribution;
    c. Print hard copies/Email SWPP; Email SWPA GIS shapefiles;
    d. Distribute SWPP Distribution Cover Letter along with copy of Town of Ophir' SWPP and SWPA GIS shapefiles.
2. Share Emergency Notification Cards with San Miguel County, Search & Rescue, San Miguel County Hazmat, Heli-skiing companies, and the National Transportation Safety Board (NTSB).
    a. Gather contact information & create mailing list for distribution;
    b. Develop Emergency Notification Cards that includes maps of the SWPAs and water system contact information;
    c. Print copies of Emergency Notification Cards;
    d. Mail/Distribute Emergency Notification Cards.
3. Subscribe to San Miguel County's CodeRED Wireless Notification System and "Notify Me" News Flashes in order to be alerted to emergency incidents within the SWPAs.
4. Request immediate notification of any spills that are reported to EPA, CDPHE, and San Miguel County Hazmat.
5. Report any spills within the SWPAs accordingly to EPA & CDPHE, Town of Ophir, San Miguel County HazMat, San Miguel Sheriff's Office, and San Miguel County Office of Emergency Management.

6. Continue to have travel management plans that restrict motor vehicle access and usage in source water protection areas in conjunction with the USFS and San Miguel County.

Future Land Use/Development

Priority Ranking: Low

Development of the land within the Town of Ophir's Source Water Protection Areas is unlikely due to the remoteness of the area. If future development were to occur, strong collaboration between local and county government is crucial for the protection of drinking water sources. Collaboration maximizes the effectiveness of initiatives led by land use planners, water utilities, watershed associations, government officials, conservationists, farmers and foresters (The Trust for Public Land, 2009).

Future Land Use/Development Best Management Practices Recommendations

1. Share electronic and hard copies of the Town of Ophir' SWPP and GIS shapefiles/maps of the SWPAs with San Miguel County and the USFS.
    a. Gather contact information & create mailing list for distribution;
    b. Utilize CRWA's "SWPP Distribution Letter" template to develop a cover letter for SWPP distribution;
    c. Print hard copies/Email SWPP; Email SWPA GIS shapefiles;
    d. Distribute SWPP Distribution Cover Letter along with copy of Town of Ophir' SWPP and SWPA GIS shapefiles.
2. Review San Miguel County Master Plans, San Miguel County High Country Zoning District, and Land Use Codes as they relate to SWPAs.
3. Coordinate w/ private landowners, USFS, and San Miguel County to minimize human impacts on SWPAs.
4. Update Ophir Land Use Code to include revised Source Water Protection Area map.

Wildlife

Priority Ranking: Low

The Town of Ophir's SWPAs are home to many types of wildlife including deer, elk, moose, lynx, mountain lions, coyotes and bears, who feed upon the land. While impacts from wildlife is considered a low risk to the Steering Committee, this activity can impact riparian health, stream-channel conditions and water quality. The most common water quality impacts include pathogen contamination, sedimentation, and increased water temperatures from loss of vegetative stream coverage. Grazing activities with the highest potential for direct and indirect impacts to water resources include long-term concentrated grazing in riparian areas, and trampling/trailing near water sources. Direct bank damage may add large amounts of sediment directly into streams, especially in wet meadow streams or erosive topography that is prone to gully formation.

Wildlife Best Management Practices Recommendations

1. Install fencing around spring boxes within Zone 1 of SWPA.
2. Continue to monitor water sources for wildlife impacts.
    a. If any impacts to water quality are determined to be from wildlife, share information with USFS and Colorado Parks & Wildlife.

3. Coordinate water quality studies between the Town of Ophir, San Miguel County, USFS, San Miguel Watershed Coalition, Mountain Studies Entities. Share information on water quality studies between pertinent agencies and entities.
4. Continue River Watch monitoring program.

SOURCE WATER BEST MANAGEMENT PRACTICES

The Steering Committee reviewed and discussed several possible best management practices that could be implemented within the Source Water Protection Area to help reduce the potential risks of contamination to the community's source water. The Steering Committee established a "common sense" approach in identifying and selecting the most feasible source water management activities to implement locally. The best management practices were obtained from multiple sources including: Environmental Protection Agency, Colorado Department of Public Health and Environment, Natural Resources Conservation Service, and other source water protection plans.

The Steering Committee recommends the best management practices listed in the following table be considered for implementation.

Table 6: Source Water Protection Best Management Practices

Issue	Priority Ranking	Best Management Practices
Security/Vandalism	High	1. Install or replace signage at strategic points within Town of Ophir's SWPA about source water protection. a. Request Source Water Protection Road Signs from CDPHE; b. Develop signage with local contact info to display below CDPHE's signs; c. Install Source Water Protection Road Signs. 2. Install, repair, and maintain fencing, security gates, locks, and/or security camera at/near intakes and storage tanks.
Forest health	High	1. Share electronic and hard copies of the SWPP and GIS shapefiles of the SWPA with the USFS, CSFS, San Miguel County, and Private Landowners. a. Gather contact information & create mailing list for distribution; b. Utilize CRWA's "SWPP Distribution Letter" template to develop a cover letter for SWPP distribution; c. Print hard/CD copies of SWPP; print CDs with SWPA GIS shapefiles; d. Distribute & SWPP Distribution Cover Letter along with copy of Town of Ophir' SWPP and SWPA GIS shapefiles. 2. Support adaptive forest management in conjunction with regional entities with the US Forest Service. 3. Continue to monitor water sources for impacts cause by decreased forest health. 4. Explore possible grants through West Region Wildfire Council for further mitigation & education.
Infrastructure failure	High	1. Continue to conduct maintenance on Town of Ophir's water infrastructure. 2. Develop a long-term maintenance plan for the Town of Ophir's water infrastructure. 3. Update the Town of Ophir Emergency Operations Plans to include infrastructure failure as a criterion 4. In the event of infrastructure failure, utilize Code Red and mass email to alert residents.
Abandoned Mines	High	1. Share electronic and hard copies of the Town of Ophir' SWPP and GIS shapefiles/maps of the SWPAs with CDPHE, DRMS, CDNR, USFS, EPA, San Miguel Watershed Coalition, San Miguel Conservation Foundation, and Private Landowners and request to be notified of mine blowouts and spill events within SWPAs in a timely manner. a. Gather contact information & create mailing list for distribution;

Issue	Priority Ranking	Best Management Practices
		b. Utilize CRWA's "SWPP Distribution Letter" template to develop a cover letter for SWPP distribution; c. Print hard copies/Email SWPP; Email SWPA GIS shapefiles; d. Distribute SWPP Distribution Cover Letter along with copy of Town of Ophir' SWPP and SWPA GIS shapefiles. 2. Share Emergency Notification Cards with CDPHE, DRMS, CDNR, USFS, EPA, San Miguel Watershed Coalition, San Miguel Conservation Foundation, and Private Landowners. a. Gather contact information & create mailing list for distribution; b. Develop Emergency Notification Cards that includes maps of the SWPAs and water system contact information; c. Print copies of Emergency Notification Cards; d. Mail/Distribute Emergency Notification Cards. 3. Update Town of Ophir Emergency Response Plan to include appropriate agencies as it pertains to abandoned mines. a. Develop notification procedures with organizations that might first notice the problems (e.g. San Miguel County, Telluride Fire Department, USFS, and/or Private Landowners. b. Develop and maintain an effective contact list to report and collaborate on any issues that may arise. c. Report any issues or threats that arise to the appropriate agencies. 4. Coordinate water quality studies between the Town of Ophir, San Miguel County, USFS, San Miguel Watershed Coalition, Mountain Studies Entities, and any other relevant entities. Share information on water quality studies between pertinent agencies and entities.
Misc. Water Quality Issues	High	1. Continue to monitor air quality and coordinate further water quality and air quality studies between the Town of Ophir, San Miguel County, USFS, EPA, San Miguel Watershed Coalition, Mountain Studies Entities, and any other relevant entities. Share information on water quality studies between pertinent agencies and entities. **2.** Refer to Center for Snow & Avalanche Studies' Colorado Dust-on-Snow Program to monitor for dust accumulation on snowpack. **3.** Continue River Watch monitoring program.
Drought	High	1. Develop water conservation measures and conservation plan for Town of Ophir's water supplies. 2. Ensure Town of Ophir's water rights are well established.

Issue	Priority Ranking	Best Management Practices
Public Education	High	1. Post a copy of the SWPP on the Town of Ophir's website. 2. Install signage at strategic points within the Source Water Protection Area that explains the importance of source water protection. 3. Develop a brochure or flyer to distribute to community members that explains the importance of source water protection.
Wildfire	Medium	1. Refer to San Miguel County's Community Wildfire Protection Plan, San Miguel County All Hazards Mitigation Plan, & USFS Fuels Management Plan as a guide to assess and understand wildfire risk. 2. Share electronic and hard copies of the SWPP and GIS shapefiles of the SWPA with the USFS, San Miguel County, and Telluride Fire Protection District. a. Gather contact information & create mailing list for distribution; b. Utilize CRWA's "SWPP Distribution Letter" template to develop a cover letter for SWPP distribution; c. Print hard/CD copies of SWPP; print CDs with SWPA GIS shapefiles; d. Distribute & SWPP Distribution Cover Letter along with copy of Town of Ophir' SWPP and SWPA GIS shapefiles. 3. Share Emergency Notification Cards with the USFS, San Miguel County, Telluride Fire Protection District, and dispatch centers. a. Gather contact information & create mailing list for distribution; b. Develop Emergency Notification Cards that includes maps of the SWPAs and water system contact information; c. Print copies of Emergency Notification Cards; d. Mail/Distribute Emergency Notification Cards. 4. Become familiar with the Town of Ophir Emergency Operations Plan as it relates to wildfire 5. Perform wildfire mitigation around intakes within Zone 1 of SWPA in conjunction with USFS. Fuel mitigation around intakes within Zone 1 (in conjunction w/ USFS). Explore possible grants through West Region Wildfire Council for further wildfire mitigation & education. 6. Explore opportunities for increasing amount of water storage capacity.
Severe Weather	Medium	1. Subscribe to San Miguel County's CodeRED Wireless Notification System in order to be alerted to severe weather events. 2. Monitor weather forecasts and other hazardous weather outlooks from NOAA. Enact the Town of Ophir's Emergency Response Plan when severe weather threatens water infrastructure.

Issue	Priority Ranking	Best Management Practices
		3. Share electronic and hard copies of the SWPP and GIS shapefiles of the SWPA with San Miguel County; USFS; Telluride Fire Protection District. a. Gather contact information & create mailing list for distribution; b. Utilize CRWA's "SWPP Distribution Letter" template to develop a cover letter for SWPP distribution; c. Print hard/CD copies of SWPP; print CDs with SWPA GIS shapefiles; d. Distribute SWPP Distribution Cover Letter along with copy of Town of Ophir' SWPP and SWPA GIS shapefiles. 4. Share Emergency Notification Cards with the San Miguel County Office of Emergency Management. a. Gather contact information & create mailing list for distribution; b. Develop Emergency Notification Cards that includes maps of the SWPAs and water system contact information; c. Print copies of Emergency Notification Cards; 5. Mail/Distribute Emergency Notification Cards.
Recreation	Medium	1. Work with USFS and San Miguel County to install signage or post information about source water protection at entry points or trailhead in SWPA. a. Identify major recreational sites in SWPA; b. Request SWPA signage from CDPHE or develop other signage/outreach material; c. Install signage at recreational sites identified. 2. Keep updated on permit requirements on USFS lands in SWPA and work with USFS to disseminate information about source water protection to commercial users within SWPA 3. Request the locations of the Town of Ophir's SWPAs be included in the revised USFS GMUG Forest Service Plan. 4. Share information about the Town of Ophir' SWPP maps of the SWPAs with commercial users a. Gather contact information & create mailing list for distribution; b. Utilize CRWA's "SWPP Distribution Letter" template to develop a cover letter to explain the SWPP; c. Print hard of the SWPAs; d. Distribute SWPP Distribution Cover Letter along with maps of the SWPAs 5. Work with the USFS to identify system trails within the SWPAs that are sustainable, and close

Issue	Priority Ranking	Best Management Practices
		those that are not sustainable and/or maintainable. 6. Work with the USFS to maintain system trails within the SWPAs. 7. Share the Town of Ophir Travel Management Plan with the USFS and San Miguel County. 8. Continue to have travel management plans that restrict motor vehicle access and usage in source water protection areas in conjunction with the USFS and San Miguel County.
Emergency incidents/response	Medium	1. Share electronic and hard copies of the Town of Ophir' SWPP and GIS shapefiles/maps of the SWPAs with San Miguel County Sheriff's Office, Search & Rescue, San Miguel County Hazmat, Heli-skiing companies, and the National Transportation Safety Board (NTSB). a. Gather contact information & create mailing list for distribution; b. Utilize CRWA's "SWPP Distribution Letter" template to develop a cover letter for SWPP distribution; c. Print hard copies/Email SWPP; Email SWPA GIS shapefiles; d. Distribute SWPP Distribution Cover Letter along with copy of Town of Ophir' SWPP and SWPA GIS shapefiles. 2. Share Emergency Notification Cards with San Miguel County, Search & Rescue, San Miguel County Hazmat, Heli-skiing companies, and the National Transportation Safety Board (NTSB). a. Gather contact information & create mailing list for distribution; b. Develop Emergency Notification Cards that includes maps of the SWPAs and water system contact information; c. Print copies of Emergency Notification Cards; d. Mail/Distribute Emergency Notification Cards. 3. Subscribe to San Miguel County's CodeRED Wireless Notification System and "Notify Me" News Flashes in order to be alerted to emergency incidents within the SWPAs. 4. Request immediate notification of any spills that are reported to EPA, CDPHE, San Miguel County Hazmat. 5. Report any spills within the SWPAs accordingly to EPA & CDPHE, Town of Ophir, San Miguel County HazMat, San Miguel Sheriff's Office, and San Miguel County Office of Emergency Management. 6. Continue to have travel management plans that restrict motor vehicle access and usage in source water protection areas in conjunction with the USFS and San Miguel County.
Wildlife	Low	1. Install fencing around spring boxes within Zone 1 of SWPA

Issue	Priority Ranking	Best Management Practices
		2. Continue to monitor water sources for wildlife impacts a. If any impacts to water quality are determined to be from wildlife, share information with USFS and Colorado Parks & Wildlife. 3. Coordinate water quality studies between the Town of Ophir, San Miguel County, USFS, San Miguel Watershed Coalition, Mountain Studies Entities. Share information on water quality studies between pertinent agencies and entities. 4. Continue River Watch monitoring program.
Future Land Use/Development	Low	1. Share electronic and hard copies of the Town of Ophir' SWPP and GIS shapefiles/maps of the SWPAs with San Miguel County and the USFS. a. Gather contact information & create mailing list for distribution; b. Utilize CRWA's "SWPP Distribution Letter" template to develop a cover letter for SWPP distribution; c. Print hard copies/Email SWPP; Email SWPA GIS shapefiles; d. Distribute SWPP Distribution Cover Letter along with copy of Town of Ophir' SWPP and SWPA GIS shapefiles. 2. Review San Miguel County Master Plans, San Miguel County High Country Zoning District, and Land Use Codes as they relate to SWPAs. 3. Coordinate w/ private landowners, USFS, and San Miguel County to minimize human impacts on SWPAs. 4. Update Ophir Land Use Code to include revised Source Water Protection Area map.

EVALUATING EFFECTIVENESS OF SOURCE WATER PROTECTION PLAN

The Town of Ophir is committed to evaluating the effectiveness of the various source water best management practices that have been implemented. The purpose of evaluating the effectiveness is to determine if the various source water best management practices are being achieved, and if not, what adjustments to the Source Water Protection Plan will be taken in order to achieve the intended outcomes. It is further recommended that this Plan be reviewed at a frequency of once every 5 to 10 years or if circumstances change resulting in the development of new water sources and source water protection areas, or if new risks are identified.

The Town of Ophir is committed to a mutually beneficial partnership with the Colorado Department of Public Health and Environment in making future refinements to their source water assessment and to revise the Source Water Protection Plan accordingly based on any major refinements.

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APPENDICES[2]

A. Source Water Assessment Report

B. Source Water Assessment Report Appendices

C. Contingency Plan

D. CRWA's SWAP Risk Assessment Matrix

E. Table A-1 Discrete Contaminant Types

F. Table A-2 Discrete Contaminant Types (SIC Related)

G. Table B-1 Dispersed Contaminant Types

H. Table C-1 Contaminants Associated with Common PSOC's

I. Four Corners Air Quality Task Force Report of Mitigation Options

J. San Miguel County All Hazard Mitigation Plan

[2] All appendices are located on the CD version of this SWPP.