Buffalo Mountain Metropolitan District Source Water Protection Plan

Summit County, Colorado
March 16, 2017

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For the Community Water Provider:
BMMD Water System, PWSID#0159025
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Cover Photo: Buffalo Mountain, Silverthorne, CO (*summitpost.org*)

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 Buffalo Mountain Metropolitan District was developed using version 16.09.09 of the Colorado Rural Water Association's Source Water Protection Plan Template.

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COMMON ACRONYMS

BLM	Bureau of Land Management
BMMD	Buffalo Mountain Metropolitan District
BMP	Best Management Practice
CDOT	Colorado Department of Transportation
CDPHE	Colorado Department of Public Health and Environment
COGCC	Colorado Oil and Gas Conservation Commission
CRWA	Colorado Rural Water Association
EPA	Environmental Protection Agency
GIS	Geographic Information System
NRCS	Natural Resources Conservation Service
PSOC	Potential Source of Contamination
SDWA	Safe Drinking Water Act
SWAA	Source Water Assessment Area
SWAP	Source Water Assessment and Protection
SWPA	Source Water Protection Area
SWPP	Source Water Protection Plan
TOT	Time of Travel
USDA	United States Department of Agriculture
USFS	United States Forest Service
WFSI	Wildfire Susceptibility Index
WUI	Wildland-Urban-Interface

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 implement to decrease 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 Buffalo Mountain Metropolitan District (BMMD) 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 and individual meetings with water operators, government, and agency representatives during the months of June 2013 to August 2013, at the District office. During the development of this Plan, a Steering Committee was formed to develop and implement this Source Water Protection Plan. Colorado Rural Water Association was instrumental in this effort by providing technical assistance in the development of this Source Water Protection Plan.

The BMMD obtains its drinking water from four (4) groundwater wells in the Blue River Watershed and/or Salt Lick Gulch Watershed. The Primary Source Water Protection Area for these water sources is defined as a 0.25mile radius around the wellheads. Most of the Primary Zone is currently developed and is zoned for commercial use. The Secondary Zone encompasses an area approximately 6 square miles. This area covers a large portion of Interstate I-70 which parallels several rivers that are susceptible to hazardous road spills. The hazardous materials have a susceptibility to infiltrate ground water. This Source Water Protection Area is the area that the BMMD 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. Through this process, it was determined that the highest priority potential contaminant sources and/or issues of concern are: **Commercial/Industrial sites located within the Primary Zone; Road Spills/Road Maintenance; Storm water; Underground storage tanks; Structure Fire Run-off; Natural Hazards such as Wildfire; and Dillon Reservoir release**. Other noted water quality threats include: **Security/Vandalism; Noxious Weed Treatment; Emergency Inter-connection with Silverthorne; Emergency Back-Up power; Conservation; and Inter-Public water system communication**.

The Steering Committee developed several best management practices that may help 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 best management practices which pertain to the highest priority potential contaminant sources and other issues of concern.

- Meet with various industrial and commercial entities within the Primary Zone to raise awareness about source water protection. Provide District contact cards to these entities in case of emergency.
- Distribute District contact cards to all local emergency responders.
- Install "Source Water Protection Area" signage at strategic locations throughout the protection zones.
- Encourage best management practices during road maintenance to prevent harmful materials from entering source waters.
- Maintain a current inventory and information on the status of regulated above & underground storage tanks located within the Primary Zone.
- Keep lines of communication open with Denver Water to keep informed about Dillon Reservoir water releases.

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 three 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 (GWPC, 2008).

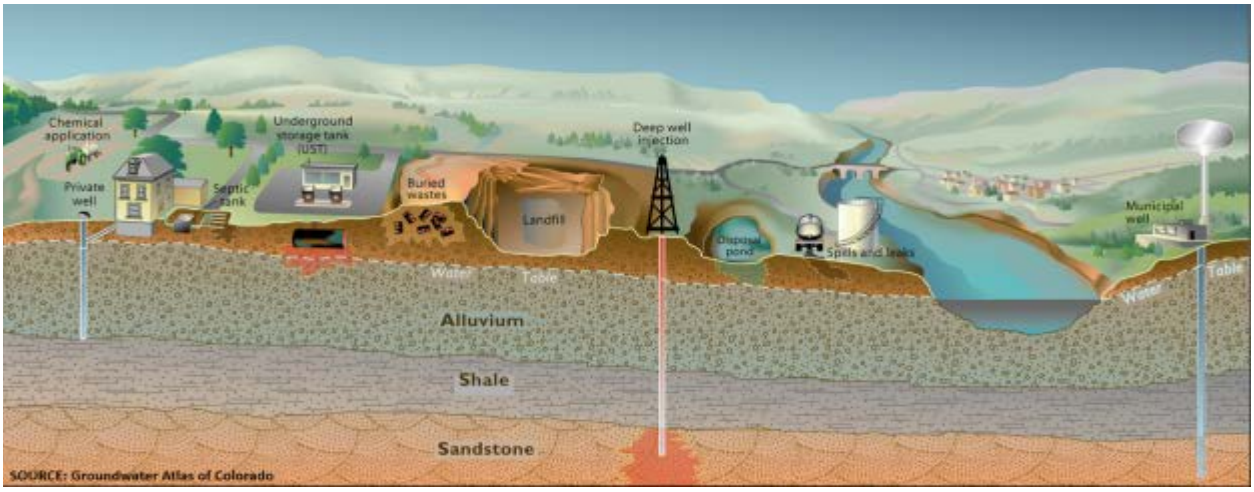


Figure 1: Schematic drawing of the potential source of contamination to surface and groundwater

The Buffalo Mountain Metropolitan District (BMMD) 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 BMMD's commitment to reducing risks to their drinking water supply.

Purpose of the Source Water Protection Plan

The Source Water Protection Plan (SWPP) is a tool for the BMMD 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.

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 2, respectively.

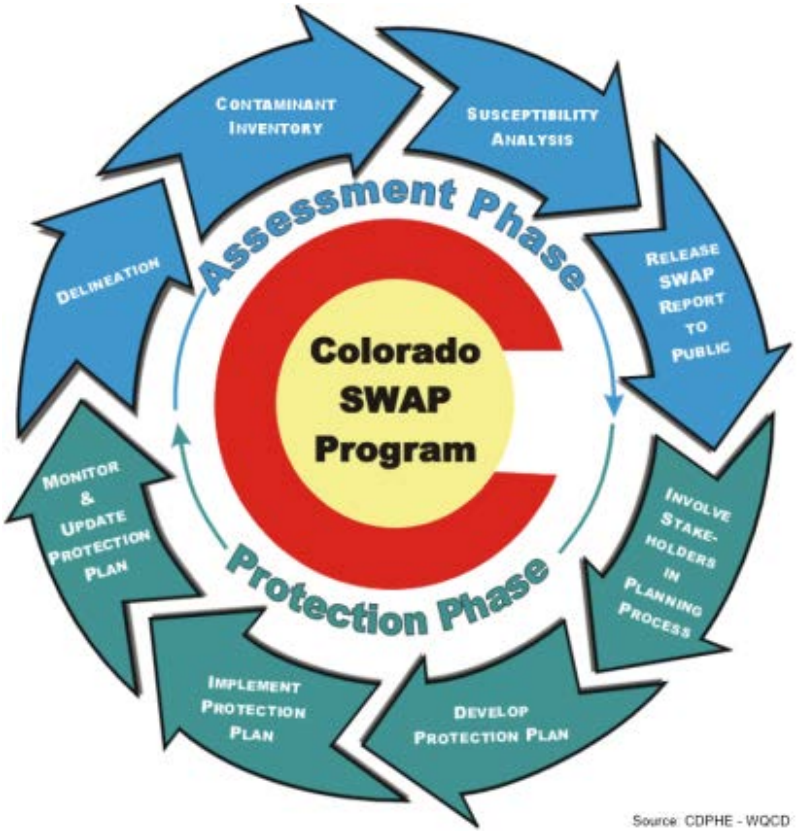


Figure 2: Source Water Assessment and Protection Phases

Source Water Assessment Phase

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 (Appendices 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 2, 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 2. 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

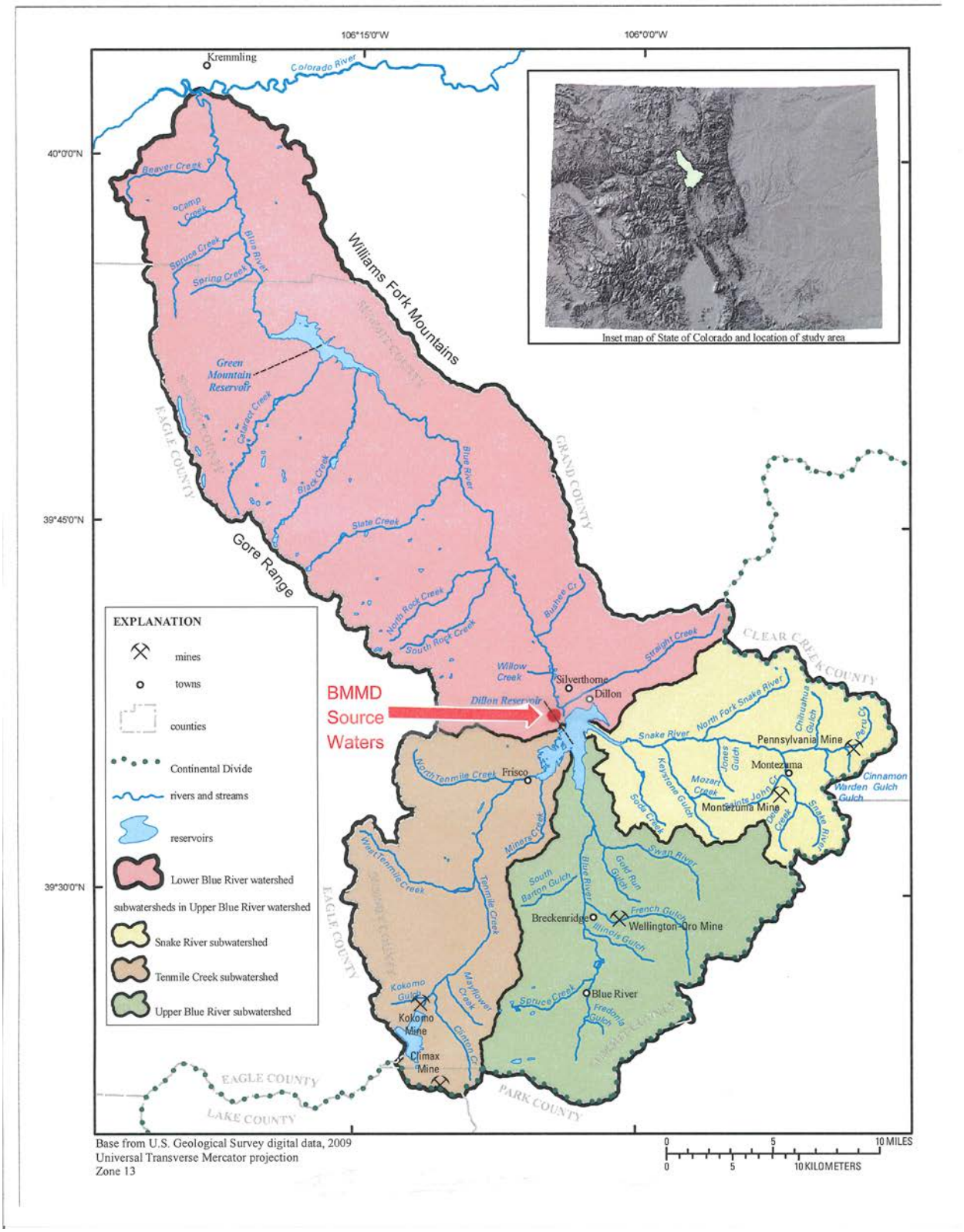
Location and Description

The BMMD Service Plan was approved by the Board of County Commissioners and the District Court of Summit County in 1970. The BMMD provides water, sewer, road maintenance and covenant enforcement services to the Wildernest subdivision. The business and affairs of BMMD is governed by a five (5) member Board of Directors and BMMD Manager. The BMMD services nearly 2,500 residential units and several commercial units located on approximately 300 acres in an unincorporated area of Summit County, Colorado.

Summit County, Colorado is located approximately 70 miles west of Denver in the central Rocky Mountain Region of the state. The County's boundaries are the Eisenhower Tunnel to the east, the top of Vail Pass to the west, Hoosier Pass to the south, and Green Mountain Reservoir to the north. The highways that serve as major access to the County are I-70 from the east and west, and State Highway 9 and Highway 6 from the north and south.

Summit County's current population is approximately 24,000. The county has four primary population centers: Breckenridge, which is the oldest town and serves as the county seat, Dillon, Frisco, and Silverthorne. Summit County has an average annual snowfall of 159.4 inches, and is the home of four major ski resorts: Arapahoe Basin, Breckenridge, Copper Mountain, and Keystone. Elevation ranges from 7,947 feet to 14,270 feet above sea level. (Summit County Tourism)

The BMMD is located just West of the Town of Silverthorne, between the Gore Mountain Range to the North/West, the Continental Divide to the East, and the Ten Mile Range to the South. The BMMD's source waters intake facility is located on private lands owned by the BMMD. The private land is located immediately adjacent to the lower Blue River in the Town of Silverthorne, ½ mile below the Dillon Reservoir, and approximately 100 yards North of Interstate I-70.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Kremmling
Colorado River
Beaver Creek
Camp Creek
Spruce Creek
Spring Creek
Blue River
Williams Fork Mountains
Green Mountain Reservoir
Cataract Creek
Black Creek
Slate Creek
Gore Range
North Rock Creek
South Rock Creek
Bushaw Cr.
Straight Creek
Willow Creek
Silverthorne
Dillon
Dillon Reservoir
BMMD Source Waters
Inset map of State of Colorado and location of study area
EXPLANATION
mines
towns
counties
Continental Divide
rivers and streams
reservoirs
Lower Blue River watershed
subwatersheds in Upper Blue River watershed
Snake River subwatershed
Tenmile Creek subwatershed
Upper Blue River subwatershed
EAGLE COUNTY
GRAND COUNTY
CLEAR CREEK COUNTY
SUMMIT COUNTY
PARK COUNTY
LAKE COUNTY
Snake River
North Fork Snake River
Chihuahua Gulch
Peru Cr.
Pennsylvania Mine
Montezuma
Jones Gulch
Keystone Gulch
Mozart Creek
Saints John Cr.
Montezuma Mine
Deer Creek
Snake River
Cinnamon Gulch
Warden Gulch
Soda Creek
North Tenmile Creek
Frisco
Miners Creek
West Tenmile Creek
Tenmile Creek
Swan River
Goer Run Gulch
South Barton Gulch
Blue River
French Gulch
Illinois Gulch
Breckenridge
Wellington-Oro Mine
Kokomo Gulch
Kokomo Mine
Mayflower Creek
Climax Cr.
Climax Mine
Spruce Creek
Blue River
Fredonia Gulch
Base from U.S. Geological Survey digital data, 2009
Universal Transverse Mercator projection
Zone 13
0 5 10 MILES
0 5 10 KILOMETERS

Physical Characteristics

The subdivision serviced by BMMD is bordered on three sides by national forest. Roughly 80% of the land in the county is public land managed by the U.S. Forest Service and Bureau of Land Management.

Vegetation is sagebrush-grass at low elevations, and with increasing elevation ranges from coniferous forest to alpine tundra. (NRCS Rapid Watershed Assessment, 2009).

Hydrologic Setting

The Blue River watershed is west of the Continental Divide in the central Rocky Mountains of Colorado and drains 680 square miles. The watershed includes all of Summit County, a small section in Grand County, and a smaller section in Lake County. Headwaters for the Blue River watershed originate in the alpine environments of the Williams Fork Mountains (eastern boundary of the watershed), Continental Divide (southern and southeastern boundary), and the Gore Range (western boundary).

Geology in the Blue River watershed ranges from basement rocks of Precambrian age to Quaternary-age alluvium. Three major tributaries converge at Dillon Reservoir to form the upper Blue River watershed:

- Snake River (from the east)
- Blue River (from the south)
- Tenmile Creek (from the west)

Two tributaries converge below the Dillon Reservoir to form the lower Blue River watershed:

- Straight Creek (from the east)
- Salt Lick Creek (from the west)

BMMD obtains its drinking water from four (4) wells. It is not known whether the wells draw from the Blue River watershed or from an unknown aquifer from the Salt Lick Gulch area.

The BMMD has not petitioned the Water Quality Control Commission for the establishment of a classified groundwater area and associated site-specific ground water quality standards for is ground water intakes. (U.S. Department of the Interior U.S. Geological Survey)

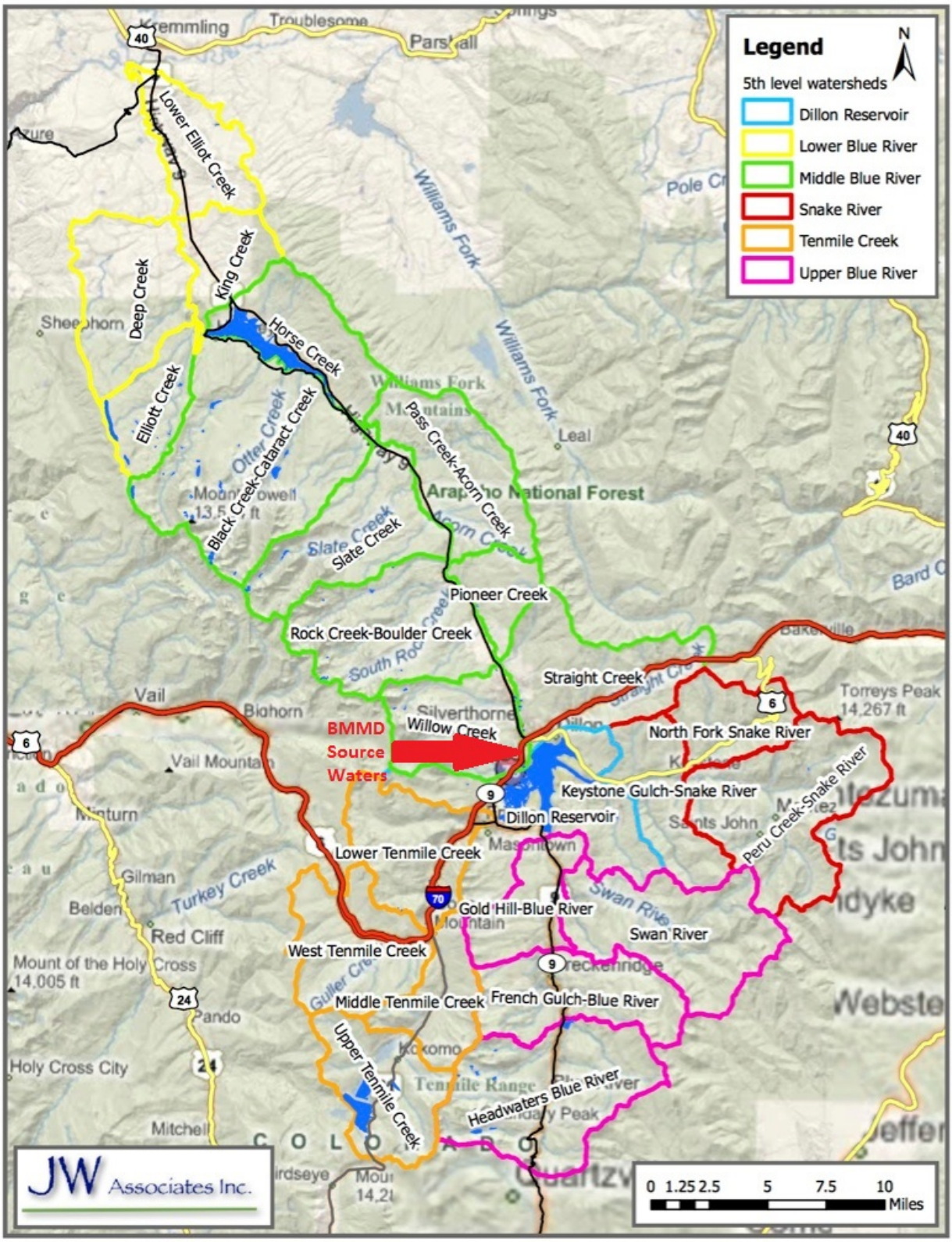


Figure 3: Summit County Watersheds (Source: JW Associates, Inc.)

Groundwater Protection

Groundwater protection is managed as two separate issues of quantity and quality in Colorado. Quantity issues are managed through the Colorado Division of Water Resources/Office of the State Engineer. The Division of Water Resources administers and enforces all surface and groundwater rights throughout the State of Colorado, issues water well permits, approves construction and repair of dams, and enforces interstate compacts. The Division of Water Resources is also the agency responsible for implementing and enforcing the statutes of the Groundwater Management Act passed by the Legislature as well as implementing applicable rules and policies adopted by the Colorado Groundwater Commission and the State Board of Examiners of Water Well Construction and Pump Installation Contractors.

The CDPHE's Colorado Water Quality Control Commission is responsible for promulgating groundwater and surface water classifications and standards. Colorado's Water Quality Control Commission has established basic standards for groundwater regulations that apply a framework for groundwater classifications and water quality standards for all waters within their jurisdictions. Standards are designed to protect the associated classified uses of water or a designated use. The groundwater classifications are applied to groundwaters within a specified area based upon use, quality and other information as indicated in the CDPHE Water Quality Control Commission's Regulation No. 41, "The Basic Standards for Ground Water." Statewide standards have been adopted for organic chemicals and radionuclides. Significant areas of the state have been classified for site specific use classification and the remainder of the state's groundwater is protected by interim narrative standards.

Classifications and standards are implemented by seven separate state agencies through their rules and regulations for activities that they regulate. Regulated activities include mining and reclamation, oil and gas production, petroleum storage tanks, agriculture, Superfund sites, hazardous waste generation and disposal, solid waste disposal, industrial and domestic wastewater discharges, well construction and pump installation, and water transfers.

Colorado has proactive groundwater protection programs that include monitoring groundwater for agricultural chemicals and pesticides, issuing groundwater discharge permits; voluntary cleanup program, permitting for large hog farm operations, and educational programs. In addition, water wells must have a permit and meet minimum standards of construction and pump installation.

Water Quality Data

The State of Colorado Department of Public Health and Environment protects the health of citizens by ensuring that safe drinking water is provided by Colorado's public drinking water systems. The program requires compliance with the Colorado Primary Drinking Water Regulations and implements the Federal Safe Drinking Water Act in Colorado.

Once a year the BMMD delivers a copy of the BMMD's Drinking Water Consumer Confidence Report (CCR) to each customer. Reports are based on calendar-year monitoring data. The report contains information about the BMMD source water quality, and a summary of the State's source water assessment. The report includes a table reporting the levels of detected contaminants with the maximum contaminant level (MCL), maximum contaminant level goal (MCLG), maximum residual level (MRDL), maximum residual level goal (MRDLG), action level (AL) or treatment technique (TT), common sources and the date the sample was taken. The report also details any violations of the drinking water regulations and a list of any variances or exemptions issued by the State to the system. The CCR provides the opportunity for the BMMD, the State of Colorado and the Environmental Protection

Agency (EPA) to work together to educate consumers about the sources and quality of our drinking water (CDPHE website). The BMMD has routinely passed all required water testing as mandated by State and Federal regulatory agencies, as reflected in the most recent annual CCR for calendar year 2015 (Appendix C).

Water quality of streams, reservoirs, and groundwater in the Blue River watershed in the central Rocky Mountains of Colorado has been affected by local geologic conditions, historical hard-rock metal mining, and recent urban development. With these considerations, the U.S. Geological Survey, in cooperation with the Summit Water Quality Committee, conducted a study to compile historical water-quality data and assess water-quality conditions in the watershed. Water-quality data for 51 stream sites in the upper Blue River sub-watershed were analyzed. Almost all water temperature values and dissolved-oxygen concentrations met CDPHE standards for aquatic-life protection. (Appendix D)

The Blue River Watershed Group was formed to protect, restore and promote a healthy Blue River watershed through cooperative community education, stewardship and resource management. The goal of the Blue River Watershed group is to foster an action-oriented, fully-informed and inspired community, willing and able to carry out their mission and to develop and implement watershed plans. (Blue River Watershed Group)

DRINKING WATER SUPPLY OPERATIONS

Water Supply and Infrastructure

The BMMD acquires its source water from four wells located at the BMMD facilities at 106 Adams Avenue in Silverthorne, CO. Water pumped from the wells is disinfected and placed in a 30,000-gallon holding tank called a finished water clearwell. At present, disinfection is occurring through a MIOX disinfection system. MIOX water treatment technologies combine salt, water and power to generator cost-effective water disinfection chemistries on site, on demand.

Table 1: Groundwater Supply Information

Water System Facility Name	Water System Facility Number	Total Depth of Well (ft)	Depth of Plain Casing (ft)	Depth of Perforation (ft)	Yield (gpm)	Year Drilled	Permit Number	Annual Permitted Amount (acre feet)
Well #1	1	65	40	60	400	1988	38038-F	400
Well #2R	#2R	64	41	64	400	1992	38040F-R	400
Well #3	#3	65	40	60	375	1988	13029-TH	375
Well #4	#4	63	37	63	250	1992	41935-F	400

The water distribution system is divided into five pressure zones. Each zone contains one ground storage reservoir, with the exception of zone six which contains two reservoirs. Adjacent to each reservoir is a concrete vault containing high service pumps to convey water to the next higher tank zone. Ductile iron pipe ranging in size from 6-inch to 12-inch diameter carries the treated water throughout each pressure zone. Through use of a telemetry system, water levels are controlled and supplied to each zone by the high service pumps, which push water from the zone below.

Table 2: BMMD Reservoirs

Reservoir #	Gallons	Pumps	Pressure	Elevation
Clearwell	30,000	2 Pumps @ 900 GPM each	200 psi	8,749 ft
Reservoir 2	150,000	2 Pumps @ 600 GPM each	75 psi	9,183 ft
Reservoir 3	150,000	2 Pumps @ 500 GPM each	125 psi	9,338 ft
Reservoir 4	100,000	2 Pumps @ 400 GPM each	85 psi	9,560 ft.
Reservoir 5	150,000	2 Pumps @ 400 GPM each	90 psi	9,671 ft.
Reservoir 6A	200,000	Gravity Feeds Downhill		9,846 ft
Reservoir 6B	300,000	Gravity Feeds Downhill		9,846 ft.

The BMMD also supplies supplemental water service daily to a neighboring subdivision called Mesa Cortina Water and Sanitation District (MCWS), via a 1 ½" water connection. The connection provides an estimated 15 to 25 gallons per minute of water (average day) to Mesa Cortina. The BMMD also has in place a 6-inch water connection to the MCWS to provide emergency supplemental water for fire flow conditions and vice versa. (APPENDIX E).

Figure 4: BMMD Wells (Top Left - Well #1; Top Right - Well #2; Bottom Left - Well #3; Bottom Right - Well #4)

Water Supply Demand Analysis

The BMMD services 2,318 connections and approximately 5,500 full-time residents and other users in the service area annually. The population increases drastically during peak tourist seasons in winter and summer, climbing to over 10,000.

The water system currently has the capacity to produce 366,000 gallons per day. Current estimates by the water system indicate that the average daily demand is approximately 126,000 gallons per day, and that the average peak daily demand is approximately 275,000 gallons per day. Using these estimates, the water system has a surplus average daily demand capacity of 166,000 gallons per day and a surplus average peak daily demand capacity of 91,000 gallons per day.

Using the surplus estimates above, BMMD has evaluated its ability to meet the average daily demand and the average peak daily demand of its customers in the event the water supply from one or more of its water sources becomes disabled for an extended period of time due to potential contamination. The evaluation indicated that BMMD may not be able to meet the average daily demand of its customers if as few as two (2) of its water sources became disabled for an extended period of time. The evaluation also indicated that BMMD may not be able to meet the average peak daily demand of its customers if as few as two (2) of its water sources became disabled for an extended period of time. The ability of BMMD 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.

BMMD recognizes that potential contamination of its ground water source(s) could potentially result in having to treat the ground water 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, BMMD evaluated what it might cost to replace one of its water sources if this occurs. The evaluation did not attempt to estimate facility replacement or treatment costs, which can be variable depending on the type of contaminant(s) that need(s) to be treated. The evaluation indicated that it could cost over $1 million to replace all four of its ground source water wells (Appendix E).

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 BMMD and the Wildernest community can help to reduce the risks posed by potential contamination of its water source(s). Additionally, the BMMD has developed an emergency response plan or contingency plan (Appendix F) 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, Dylan Eiler, helped facilitate the source water protection planning process. The goal of the CRWA's Source Water Protection Program is to assist rural and small communities served by public water systems to reduce or eliminate the potential risks to drinking water supplies through the development of Source Water Protection Plans, and provide assistance for the implementation of prevention measures.

The source water protection planning effort consisted of a series of public planning meetings and individual meetings. Information discussed at the meetings helped the BMMD develop an understanding of the issues affecting source water protection for the community. The Steering Committee then made recommendations for management approaches 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
June 4, 2013	First Planning Meeting - Presentation on the process of developing a Source Water Protection Plan for the BMMD. Review of the State's Source Water Assessment for BMMD. Delineation of the source water protection area.
July 10, 2013	Second Planning Meeting – Identify the delineation of the source water protection area. Inventory potential sources of contamination (PSOC'S) and issues of concern. Prioritize PSOC's and issues of concern.
August 28, 2013	Third Planning Meeting – Finalize the delineation of the source water protection area. Finalize and prioritize the potential contaminant source inventory. Develop the Best Management Practices.

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 where local stakeholders have actively participated in the development of their Protection Plan.

The BMMD's source water protection planning process attracted interest and participation from fourteen (14) stakeholders including local citizens and landowners, private businesses, water operators, local and state governments, and agency representatives. During the months of June 2013 through August 2013, three (3) stakeholder meetings were held in BMMD to encourage local stakeholder participation in the planning process. Stakeholders were notified by phone, email and mailed invitation. Input from these participants was greatly appreciated.

Steering Committee

During the development of this Plan, a volunteer Steering Committee was formed from the stakeholder group to develop and implement this Source Water Protection Plan. Specifically, the Steering Committee's role in the source water protection planning process was to advise the BMMD 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 members attended at least one Steering Committee 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 BMMD 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
Joel Cochran	Director of Emergency Management	Summit County Office of Emergency Management
Andy Flurkey	Property Management	Colorado Department of Transportation
Shellie Duplan	BMMD Manager	BMMD
John Polhemus	Manager	Summit County Road & Bridge
Eric Kircher	Water, Sewer, Road Operator	BMMD
Dan Hendershott	Environmental Health Manager	Summit County Public Health Department
Kelly Greene	Battalion Chief	Lake Dillon Fire Rescue
Cheri Breeman	Citizen and Board Member	BMMD
Zach Margolis	Utility Manager	Town of Silverthorne
Grant Anderson	Resident Engineer	Colorado Department of Transportation
Marshall Rutz	Citizen and Board Member	BMMD
Ned West	Town Planner	Town of Dillon
Scott O'Brien	Asst. Public Works Director	Town of Dillon
Robert Jacobs	County Engineer	Summit County

Development and Implementation Grant

The BMMD 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 BMMD was approved for this grant in May, 2013, and it expires on March 30, 2017. The BMMD intends on using the grant funds to implement the best management practices that are identified in this Plan.

Source Water Assessment Report Review

The BMMD 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 water(s) of BMMD from potential contamination. A copy of the Source Water Assessment Report for BMMD can be obtained by contacting the BMMD or by downloading a copy from the CDPHE's SWAP program website located at: https://www.colorado.gov/cdphe/source-water-assessment-and-protection-swap.

Defining the Source Water Protection Area

A source water protection area is the surface and subsurface areas from 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 BMMD'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 Area for each of the BMMD's sources, the Steering Committee chose to modify it before accepting it as their Source Water Protection Area for this Source Water Protection Plan.

The Source Water Protection Area was created from the original source water assessment area and then modified based on local issues of concern, and the immediacy of the potential contamination sources to the source water. The BMMD's Source Water Protection Area is defined as:

- **Primary Zone** is defined as a 0.25 mile radius around the wellhead. This area is of critical concern because of its proximity to the wells. Most of the Primary Zone is currently developed and is zoned for commercial use. This zone contains a number of possible contaminant sources, including Interstate I-70 highway, and commercial/industrial sites nearby.

- **Secondary Zone** encompasses an area approximately 6 square miles. The area covers a large portion of Interstate I-70 which parallels several rivers that are susceptible to hazardous road spills.

The Source Water Protection Area is illustrated in the following map.

Figure 5: BMMD 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 BMMD 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 BMMD is reporting its findings to the CDPHE.

After much consideration, discussion, and input from local stakeholders, the BMMD 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 Water System BMMD'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 BMMD'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 BMMD 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 Steering Committee began the task of prioritizing this inventory for the implementation of the Best Management Practices outlined in this Source Water Protection Plan (see Table 8). The strategy which the BMMD and Steering Committee used is based on four criteria.

1. **Migration Potential or Proximity to the Water Source -** The migration potential generally has the greatest influence on whether a contaminant source could provide contaminants in amounts sufficient for the source water to become contaminated at concentrations that may pose a health concern to consumers of the water. Shorter migration paths and times of travel mean less chance for dilution or degradation of the contaminant before it reaches water sources. The proximity of a potential contaminant source of contamination to the BMMD's water sources was considered relative to the two sensitivity zones in the Source Water Protection Area (i.e. Zone 1, Zone 2).

2. **Contaminant Hazard -** The contaminant hazard is an indication of the potential human health danger posed by contaminants likely or known to be present at the contaminant source. Using the information tables provided by CDPHE (see Appendices G-J), the Steering Committee considered the following contaminant hazard concerns for each contaminant source:

[1] The information contained in this Plan is limited to that available from public records and the BMMD 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.

- **Acute Health Concerns -** Contaminants with acute health concerns include individual contaminants and categories of constituents that pose the most serious immediate health concerns resulting from short-term exposure to the constituent. Many of these acute health concern contaminants are classified as potential cancer-causing (i.e. carcinogenic) constituents or have a maximum contaminant level goal (MCLG) set at zero (0).
- **Chronic Health Concerns -** Contaminants with chronic health concerns include categories of constituents that pose potentially serious health concerns due to long-term exposure to the constituent. Most of these chronic health concern contaminants include the remaining primary drinking water contaminants.
- **Aesthetic Concerns -** Aesthetic contaminants include the secondary drinking water contaminants, which do not pose serious health concerns, but cause aesthetic problems such as odor, taste or appearance.

3. **Potential Volume -** The volume of contaminants at the contaminant source is important in evaluating whether the source water could become contaminated at concentrations that may pose a health concern to consumers of the water in the event these contaminants are released to the source water. Large volumes of contaminants at a specific location pose a greater threat than small volumes.

4. **Likelihood of Release -** The more likely that a potential source of contamination is to release contaminants, the greater the contaminant threat posed. The regulatory compliance history for regulated facilities and operational practices for handling, storage, and use of contaminants were utilized to evaluate the likelihood of release.

Based on the above criteria, the Steering Committee has ranked the potential contaminant source inventory and issues of concern in the following way:

Table 5: Prioritized Potential Contaminant Sources and Issues of Concern

BMMD PSOC's	Score
Commercial/Industrial (including Lowes, Body Shops, Waste Management, Ford)	18
Road Spills / Stormwater (cumulative and events)	18
Storage Tanks	18
Non-Monitored Commercial Sites	18
Structure Fire Runoff	10
Road Maintenance	5
Dillon Reservoir and Old Dillon Reservoir Release (intentional and non-intentional) (get more info from Denver Water to see if this is a concern)	5
Natural Hazards (Earthquake and Forest Fire)	4
Security/ Vandalism	3
Noxious Weeds Treatment	1
Total	**100**

BMMD Issues of Concern	Score
Emergency Interconnection with Silverthorne	short term
Inter- Public Water System Communication	short term
Emergency Backup Power	long term
Conservation (in light of Drought and Climate Change)	long term
Integration with Other County Wide Plans	short term

Susceptibility Analysis of Water Sources

The BMMD's Source Water Assessment Report contained a susceptibility analysis[2] to identify how susceptible an untreated water source could be to contamination from potential sources of contamination inventoried within its source water assessment area. The analysis looked at the susceptibility posed by individual potential contaminant sources and the collective or total susceptibility posed by all of the potential contaminant sources in the source water assessment area. The CDPHE developed a susceptibility analysis model for surface water sources and ground water sources under the influence of surface water, and another model for groundwater sources. Both models provided an objective analysis based on the best available information at the time of the analysis. The two main components of the CDPHE's susceptibility analysis are:

1. **Physical Setting Vulnerability Rating** – This rating is based on the ability of the surface water and/or groundwater flow to provide a sufficient buffering capacity to mitigate potential contaminant concentrations in the water source.
2. **Total Susceptibility Rating** – This rating is based on two components: the physical setting vulnerability of the water source and the contaminant threat.

Upon review of CDPHE's susceptibility analysis, the Steering Committee determined that both the Physical Setting Vulnerability Rating and the Total Susceptibility Rating for each of the Buffalo Mountain Metropolitan's sources are accurate and should remain the same (see table below).

Table 6: Updated Susceptibility Analysis

Source Name	Source Type	CDPHE Physical Setting Vulnerability Rating	CDPHE Total Susceptibility Rating
Well No. 1	Groundwater	Moderately High	Moderately High
Well No. 2R	Groundwater	Moderate	Moderately High
Well No. 3	Groundwater	Moderate	Moderately High
Well No. 4	Groundwater	Moderate	Moderately High

[2] The susceptibility analysis provides a screening level evaluation of the likelihood that a potential contamination problem could occur rather than an indication that a potential contamination problem has or will occur. The analysis is NOT a reflection of the current quality of the untreated source water, nor is it a reflection of the quality of the treated drinking water that is supplied to the public.

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. Contamination has several possible pathways to reach groundwater including direct spills, interior floor drains which discharge to the ground, leaking underground storage tanks, storm water runoff, materials used for road maintenance, flooding, and excessive sediment due to natural hazards such as wildfire and earthquakes. In certain settings, even very small amounts of a hazardous substance can contaminate large areas of groundwater.

Commercial and Industrial Practices

There are commercial and industrial businesses located within the primary and secondary source water protection area including Lowes, Silverthorne Car Wash, Sav-O-Mat and Shell gas stations, Ford automotive dealership, Caliber Collision, J&H Auto Services, Summit Mobile Service, Goodway automotive repair, and several non-monitored industrial sites located on the South side of I-70, which houses C-Dot plow trucks and various big dozer/grader/back-hoe equipment.

These commercial and industrial businesses can contribute to source water contamination. They may have storage tanks, sand/oil interceptors, or storm water basins that use or catch harmful chemicals that can runoff and infiltrate into ground source waters.

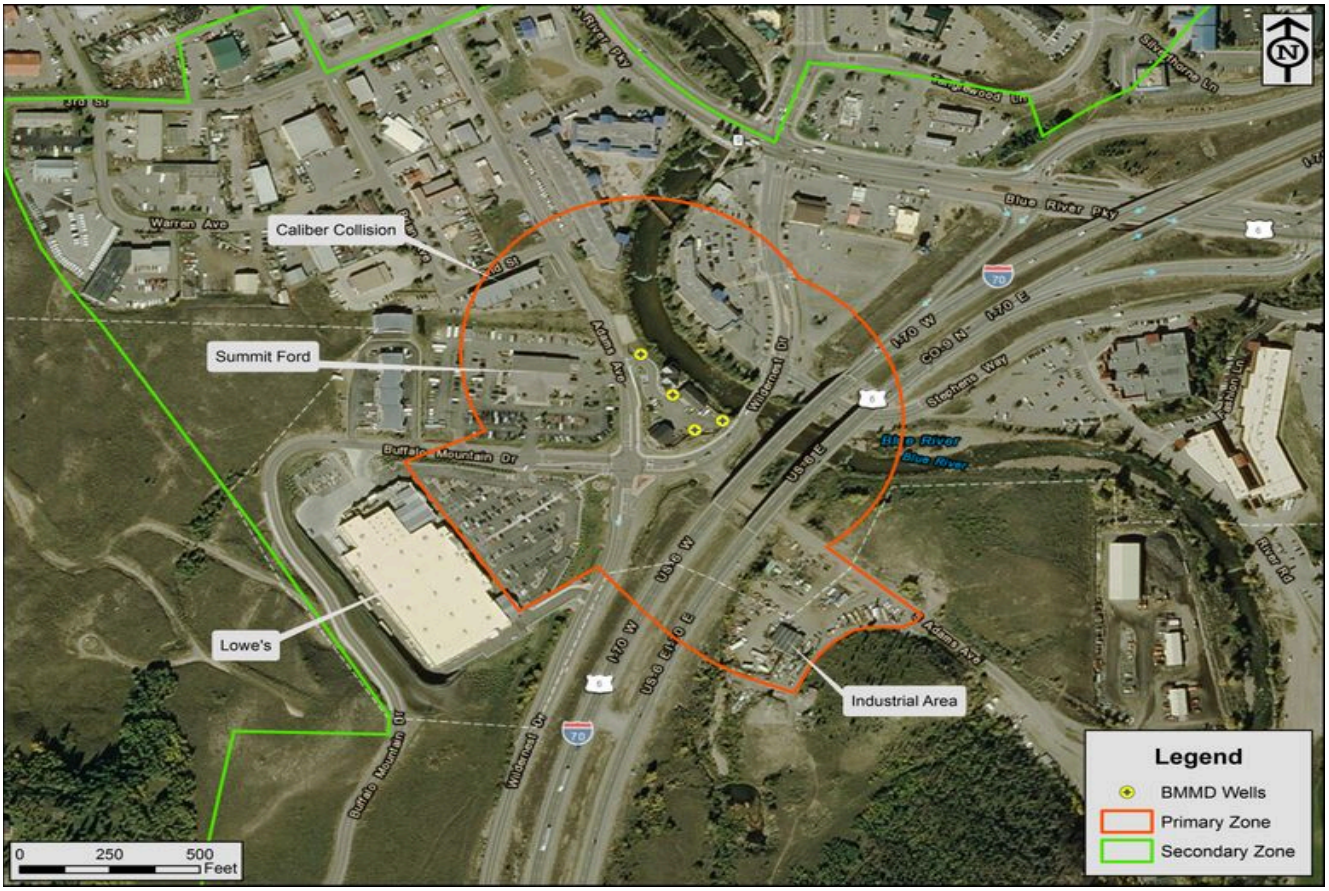


Figure 6: BMMD Source Water Protection Area

Lowes

Lowe's commercial box store is located within the primary zone. Lowe's can be expected to transport and store large quantities of paints, lubricants, sealants, glues, fertilizers, pesticides, herbicides and cleaning products for sale to the general public. The majority of the parcel is paved, with a large section dedicated to parking. Parking lots can lead to vehicle contamination caused by leaking gas tanks or oil leakages.

Lowes constructed a basin underground to catch runoff from the parking lot to provide containment of any oils or chemical spills which may occur in the parking lot. Two above ground detention ponds exist to store water runoff from snowmelt and rain.

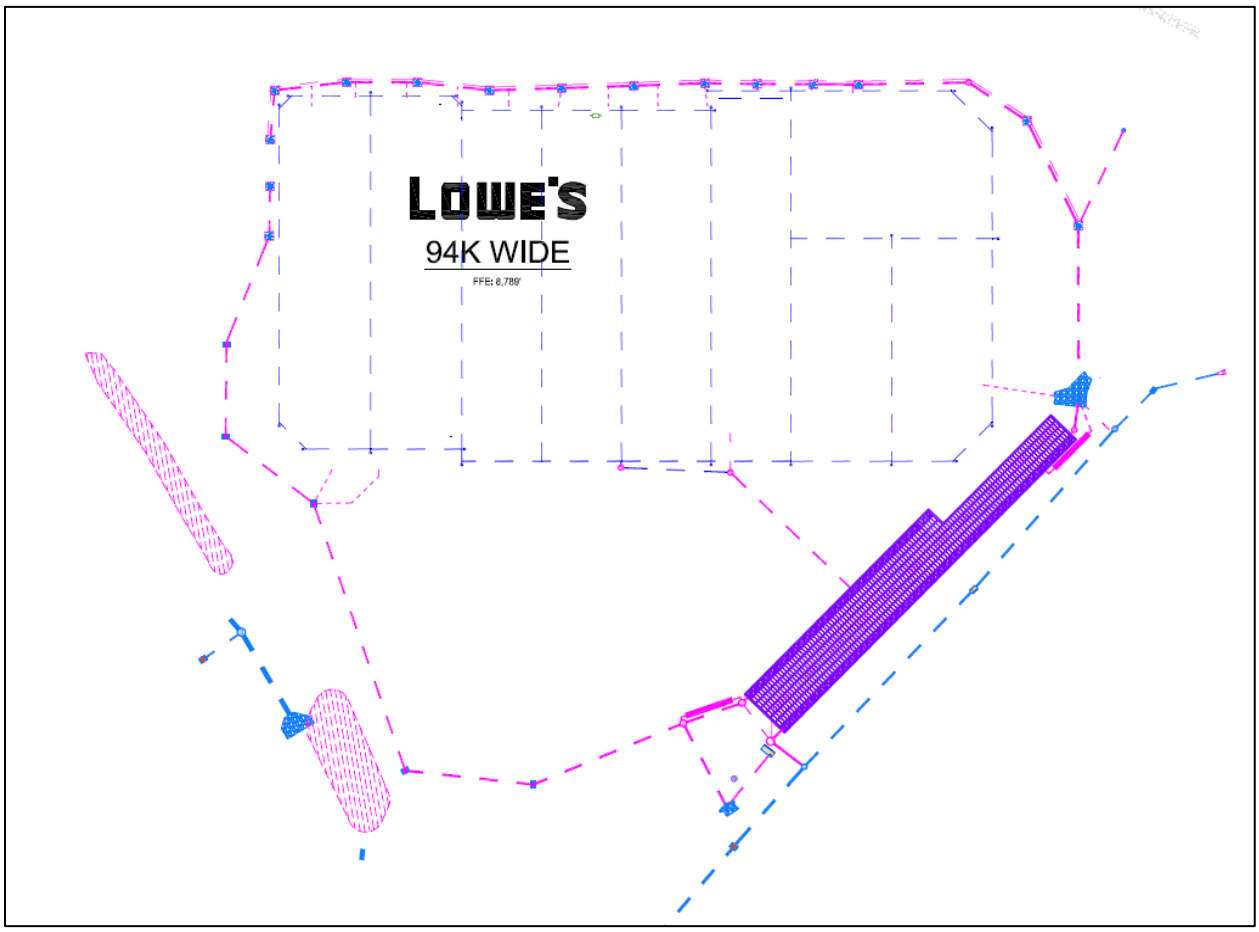


Figure 7: Schematic drawing of Lowes

The BMMD will approach Lowe's to see if they are willing to share on-going maintenance records of the catch basins & detention ponds. Proper containment and clean-up of hazardous materials should they be spilled is critical to protect local source waters. It will be helpful to make sure the proper use and disposal of harmful materials are handled with precise actions. The BMMD will also provide Lowes's with a BMMD contact cards should a hazardous spill occur.

Automotive Repair Shops, Car Dealership & Car Wash

Several automotive repair shops, a car dealership and a car wash are located within the secondary zone. Many products used by the automotive industry contain a variety of chemicals (such as solvents or

petroleum products) that are considered toxic and dangerous to human health and the environment when not used properly. If rain sinks through surface soils and encounters a contaminant at or below the surface, the water may dissolve some of the contaminant and carry it to groundwater that the public uses for drinking water. Common sources of contaminants in an automotive repair, dealership & car washes include: dip tanks, parts washers, spray solvents/cleaners, paints, paint thinner, petroleum products (gas, diesel, oil), antifreeze and batteries.

There are steps automotive businesses can implement to minimize risk to help promote drinking water protection:

1. Never pour wastes into a storm drain, septic tank, dry well, or on the ground. Do not allow floor cleaning wastewater to flow into a storm drain (inside or outside) or dry well (also known as a waste disposal well or cesspool). Close off all drains that lead to storm sewers, dry wells or septic systems if possible. If sealing drains is not possible, check with your sewerage agency to assure that your work area drains are connected to sanitary sewer.

2. If your facility has a motor vehicle waste disposal well/dry well/cesspool, contact DEQ to find out about proper abandonment procedures that will help protect drinking water and reduce your future liability.

3. Run a dry shop. Install drop pans and trays throughout the shop. Use rags and dry absorbent materials for spills. Sweep, vacuum or mop the shop floor rather than hose it down.

4. Be prepared to handle spills. Clean small spills immediately with dry absorbent or sweep liquid spills with a squeegee and dustpan and add to the appropriate waste container. Have a spill kit readily available so spills can be cleaned up quickly and properly. Train employees on proper spill response and post emergency numbers in a visible location.

5. Keep all containers, including parts washers, closed when not in use. Store within a berm or other secondary containment to prevent spills from running off into your drains or yard. Keep the parts washer turned off unless actually cleaning parts.

6. Ensure proper installation and maintenance of equipment and structures that store and transport chemicals and wastewater through your shop. Examples include underground storage tanks and associated piping, above-ground storage tanks, hydraulic lifts, trench drains, oil/water separators, and floor drains.

7. Properly maintain equipment to reduce waste from leaks or equipment breakdowns during production runs. Good maintenance programs may include regular equipment inspection, changing worn-out parts, regularly replacing seals and gaskets, repairing leaks as they occur, and following manufacturers' suggested maintenance schedules.

8. Participate in existing pollution prevention and waste reduction activities. Conduct an assessment of current operations to identify opportunities to implement alternatives including changing processes, modifying equipment, substituting raw materials, or reformulating products. (Fact Sheet - State of Oregon Department of Environmental Quality)

The BMMD will distribute emergency response contact cards to all local businesses and encourage best management practices.

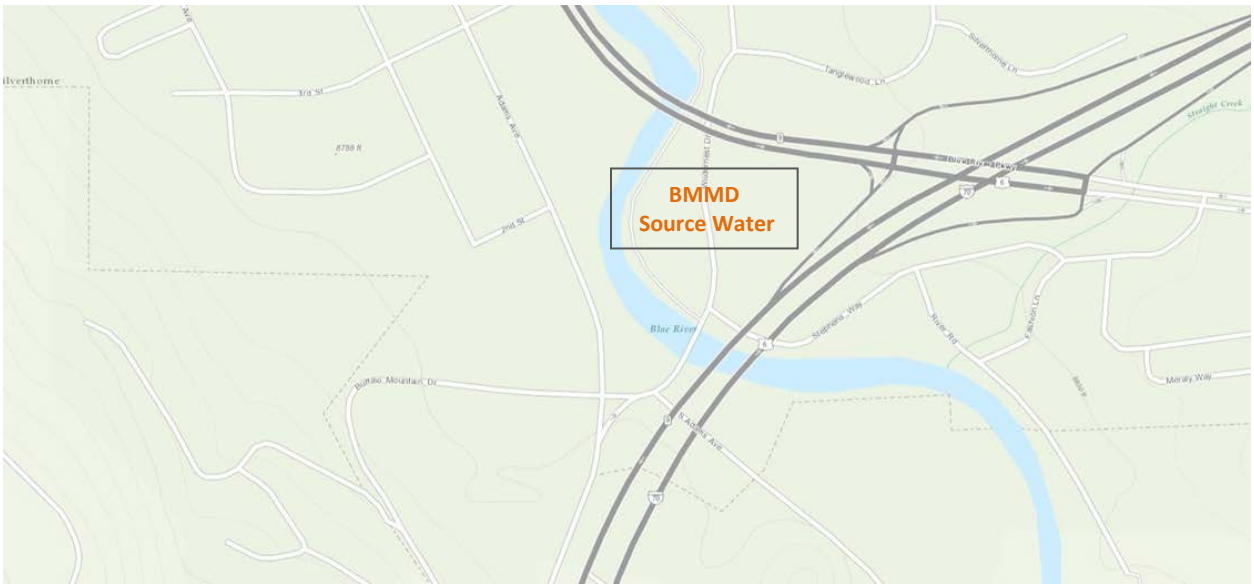
Transportation and Roadway Maintenance

The primary roadway located within the primary and secondary protection zone is Interstate 70 (I-70) which runs East/West. This interstate highway provides for interstate commerce, movement of supplies through the region, and general travel. Highway 6 & Highway 9 run nearby to I-70 and serves as the North/South corridors. Many commercial industries and private users, use both Highway 6 & 9 and I-70 for transportation of goods and services. Additionally, there are numerous County, municipal, and private roads that lie within the protection zone that also have the potential to contribute to contamination via spills and releases, stormwater runoff, and erosion.

These roadways are a potential threat to the BMMD's drinking water sources. Many of these roads lie in close proximity to, or cross over, areas within the protection area. Storm water runoff over these roads can deliver contaminants from the road surface into nearby surface waters or infiltrate into the ground surface, including: sediment, chemical de-icers, sand and road salts.

Within this protection area, spills may occur from vehicles that transport fuels, waste, and other materials potentially contaminating the source waters. Accidents can lead to spills of gasoline and other potentially dangerous transported chemicals. Roadways are frequent sites for illegal dumping of hazardous or other potentially harmful wastes.

Figure 8: Location of Source Water to local transportation & roadways (Source: coloradoodnr.info)



Incident Spills vs. Cumulative Effects

The impacts and management approaches for incident spills vs. cumulative effects can differ greatly. Incident spills typically come from trucks that transport fuels, waste, and other chemicals getting in an accident or going off the road. Chemicals from accidental spills are often diluted with water in the process of cleaning up the spill, potentially washing the chemicals into the soil and infiltrating into surface water and groundwater. Illegal dumping of hazardous or other potentially harmful wastes is

considered an incident spill as well. These spill events are addressed through emergency responders at the fire district or state/county hazard mitigation crews.

Cumulative effects to roads can result from a number of factors. Small but frequent accidents that spill chemicals can lead to overall degradation of waters, dust from roadways can increase sediment loading, and chemical application can alter the chemistry of the water supply. Sediment loading from sand application, is a prevalent problem in higher elevations and lower-flow streams.

Road Maintenance

During the winter season, CDOT and other road maintenance groups apply a salt-sand mixture and de-icer (magnesium chloride, M1000 or Ice Slicer) to melt snow and prevent slippage by vehicles. These applications occur along routes within the source water protection area, such as I-70 and major county roads. Salt from the highway is introduced into the water supply through several pathways: 1) Runoff from roads is sometimes carried to ditches and unlined channels through which the water can infiltrate into the soil and eventually into groundwater. Salt-sand mixtures can also migrate on land and enter surface water directly. 2) Snow containing these salts can often be plowed off the road and into large piles. When this accumulated pile melts during warmer weather, the water that results contains dissolved salts that can drain into surface and groundwater supplies. Salts used in the de-icing process can contribute to elevated chloride levels in groundwater and surface water through infiltration of runoff from roadways. Unlike other contaminants that can result from transportation activities such as heavy metals and hydrocarbons, chloride is not naturally removed from the water during migration through soils. It may remain in the water table for long periods of time if groundwater velocity is too slow to flush it away. These slower residence times can account for elevated levels of chloride throughout the year, not just during winter (Seawell, et al, 1998).

Regulatory Responsibility

The Colorado Department of Transportation (CDOT) is responsible for the maintenance of I-70, U.S. Highway 6 & 9. Their maintenance forces take care of the highway system, plowing snow and repairing pavement. Town of Silverthorne Public Works is responsible for the maintenance and plowing of all Town roads, and Summit County Road and Bridge Department is responsible for the maintenance of county roads within the source water protection area (Garfield County, CO Source Water Protection Plan).

The BMMD will distribute emergency response contact cards to all local emergency responders (State Patrol Hazmat Team, Lake Dillon Fire-Rescue, Summit County Emergency Management, Summit County Road & Bridge) and request to be notified when a hazardous spill takes place on any road located within the protection area(s), to ensure that any spills within the protection areas be effectively contained and remediated. Public can also be notified by installing “Source Water Protection Area” signage at strategic locations throughout the subdivision. The BMMD will also encourage best practices to prevent road materials and/or spills from entering the source waters.

Dillon Reservoir Release

Denver Water controls water release from the Dillon Reservoir. Release occurs from the bottom of the Reservoir into the Lower Blue River. High water runoff flows into the Dillon Reservoir during times of rapid melting from the mountain snowpack during the period from May to early July. Denver Water will release water from the Reservoir when certain capacity levels are met. Release flows into the Lower

Blue River will continue to increase to keep pace with rapid melting. The primary protection area is located adjacent to the Lower Blue River.

BMMD will attend the annual Spring Runoff meetings and Summit County Public Works meeting in April to keep lines of communication open with Denver Water to keep a level of awareness that source waters adjacent to the Lower Blue River need to be protected from potential flooding.

Storage Tanks

Several permitted underground storage tank sites within the source water protection area. Information of the current status of Aboveground Storage Tanks (AST) and Underground Storage Tanks (UST) within the source water protection area can be obtained from the Colorado Department of Labor and Employment Division of Oil and Public Safety's database via their Colorado Storage Tank Information (COSTIS) website at https://opus.cdle.state.co.us/OIS2000/home.asp.

Spills from leaking underground storage tanks (LUST) sites can contaminate the groundwater and also presents other hazards. Some underground storage tanks contain petroleum products (gasoline, diesel). Because gasoline is less dense than water, gasoline floats on the water table and remains relatively close to the land surface.

If a leak or spill occurs, the owner/operator must report a suspected release within 24 hours and investigate suspected releases within seven days. After confirming a release and conducting the initial response and abatement, the owner/operators must continue further source investigation, site assessment, characterization and corrective actions.

BMMD will try and meet with various industrial and commercial entities located within the protection area to raise awareness about source water protection and to encourage rapid cleanup measures to minimize contaminant migration from high-risk spills.

Natural Hazards – Wildfire & Earthquakes

Fire can quickly devastate source water areas. Once a fire tears through a watershed, the affected area is more prone to flooding and erosion, which has impacts on water supply infrastructure, water quality and drinking water treatment processes.

The BMMD source water protection area is located directly in the wildland-urban interface. Wildfires can produce dramatic physical and chemical effects on soils, streams, and ground water.

The BMMD is a participant and signatory to the Summit County Multi-Hazard Mitigation Plan, which inventories the treat that natural hazards post to people and property within the source water protection area. (Appendix G)

A wildfire threat ranking was developed for the Summit County Community Wildfire Protection Plan by the County, fire protection districts, and U.S. Forest Service. It is based on fuel hazards, risk of wildfire occurrence, essential infrastructure at risk, community values at risk, and local preparedness and firefighting capability and classifies the wildfire threat as low, medium, high, and extreme. Figure 6 shows a map of the wildfire threat ranking in the Wildernest subdivision served by the BMMD.

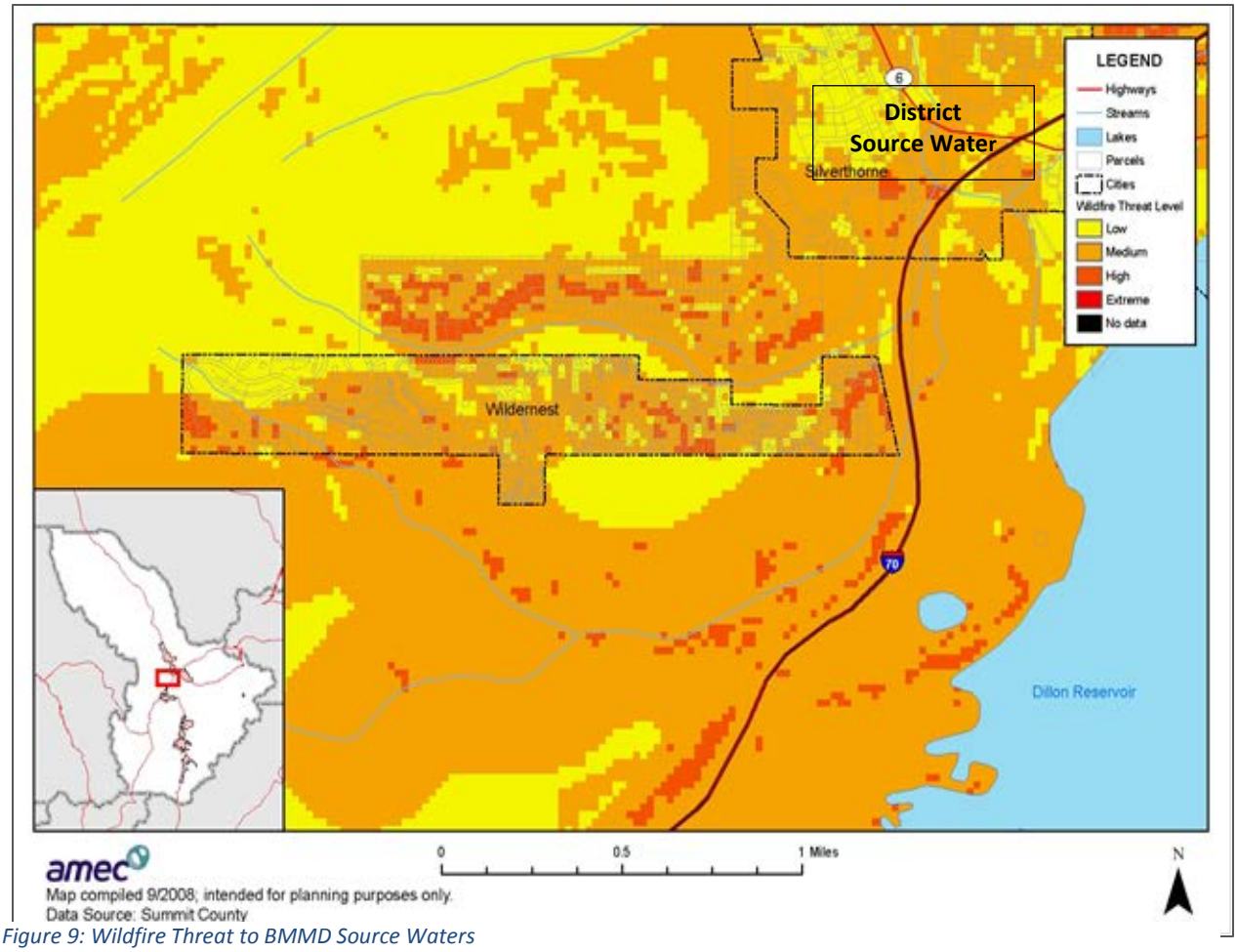


Figure 9: Wildfire Threat to BMMD Source Waters

The BMMD has been given a "High Hazard Rating". Understanding wildfire risks is the first step that can lead to safe and reliable drinking water supplies. Steps to prepare for wildfires can include assessment of the vulnerability of the watershed, assessment of the vulnerability of the drinking water system, and development of emergency response plans.

The BMMD has worked with property owners since 2005 to provide assistance with the removal of beetle-infested and dead trees to improve forest health and reduce wildfire risk. Over 4,000 trees have been removed. Since 2007, quarterly BMMD newsletters include fire safety, wildfire mitigation, and emergency preparedness information. The BMMD will continue community outreach and wildfire mitigation actions.

Structure Fire Runoff

Structure fires present a different set of potential threats to drinking water supplies. The Lake Dillon Fire Protection District (LDFR) will respond to a structure fire using large quantities of water. The large volume of water applied to these fires can exit the building in the form of runoff, carrying with it numerous chemicals and plastics that exist throughout the home, particularly in the garage. When

exposed to the heat, and mixed with subsequent water application, these constituents can create a toxic runoff mixture that can enter and contaminate both ground and surface waters.

The BMMD will work with LDFR to make them aware of source water protection efforts and inform them of the location of water intakes. Knowledge of the BMMD can better equip LDFR to implement protocols that will prevent contamination from structure fires. (Garfield County, CO Source Water Protection Plan).

Security/Vandalism

Although there have been no major acts of terrorism or vandalism to BMMD's water supplies, this is still concern for the Steering Committee. While the potential for these acts to occur is low, this remains the highest priority concern, as the impacts could be huge. Water infrastructure could be targeted directly, or water can be contaminated through the introduction of poisonous chemicals or disease-causing biological agents (Gleick, 2006). The Steering Committee recommends assessing BMMD facilities and possibly implementing security measures around Well #3.

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 focus was on selecting those protection measures that are most likely to work for the community. 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 Table 7, "Source Water Protection Best Management Practices" be considered for implementation by BMMD

Table 7: Source Water Protection Best Management Practices

Issues	Best Management Practices	Implementer
Commercial/Industrial (including Lowes)	1. Meet with various industrial and commercial entities within the SWPA to raise awareness about source water protection and to distribute Emergency Response Cards. 2. Leverage the Summit County Office of Emergency Management to get more info from RCRA facilities through the Local Emergency Planning Committee (LEPC). 3. Approach Lowe's to see if they are willing to share ongoing maintenance records with BMMD of their detention pond.	1. BMMD 2. BMMD 3. BMMD
Road Spills / Stormwater (cumulative and events)	1. Road Spills – Distribute Buffalo Mountain MD Emergency Response Cards to all local emergency responders (State Patrol Hazmat Team, Lake Dillon Fire-Rescue, Summit County Hazmat Team), and keep the information on the emergency response cards updated. 2. Work with County Office of Emergency Management to update Communications Dispatch Center Notification protocol. 3. Install "Source Water Protection Area" signage at strategic locations throughout SWPA. 4. Stormwater - Collaborate with CDOT, Dillon Valley, Dillon, 319 groups, Straight Creek Cleanup Committee, watershed groups, etc. on the protection of Straight Creek.	1. BMMD 2. Summit County OEM 3. BMMD 4. BMMD
Road Maintenance	1. Meet with Town of Silverthorne, CDOT, County Transportation Department to provide them with a copy of the Source Water Protection Plan and map of the SWPA along with GIS shapefiles. Encourage them to continue the use of their road Best Management Practices to prevent road materials from entering the source waters. Recommendations for application of road deicing and dust abatement materials include: • applying minimum amounts necessary; • apply only when removal of snow and ice cannot be accomplished by blading, plowing or sanding; • minimize use of chemicals in and adjacent to streams, aquifers, and flood prone areas; and • avoid dumping or storing chemically treated or sanded snow where it can melt and infiltrate groundwater or flow into surface waters. 2. Install "Source Water Protection Area" signage at strategic locations throughout SWPA.	1. BMMD 2. BMMD
Dillon Reservoir and Old Dillon Reservoir Release (intentional and non-intentional)	1. Attend Annual Summit County Public Works Meeting in April to keep lines of communication open with Denver Water for Dillon Reservoir, and with Silverthorne, Dillon Valley and Dillon for Old Dillon Reservoir. 2. Make sure that BMMD is on the emergency notification list for both Dillon Reservoir and Old Dillon Reservoir managing agencies. Also provide these agencies with a flow level that shows at what point the flow becomes of concern to BMMD.	1. BMMD 2. BMMD
Storage Tanks	1. Maintain a current inventory and information on the status of regulated above and underground	1. BMMD

	storage tanks in the source water protection area using the Colorado Storage Tank Information (COSTIS) website at http://costis.cdle.state.co.us. Storage tank information from this site includes: facility, tank, owner, and events. 2. Identify Leaking Underground Storage Tank (LUST) events that have occurred within the SWPA using the COSTIS database, and monitor progress on any remedial action conducted for the known contamination sites. BMMD can contact the Colorado Department of Labor and Employment Division of Oil and Public Safety (303-318-8000) for information regarding LUST events within the SWPA. BMMD can also contact the Public Records Center at (303) 318-8521 or (303) 318-8522 for a file review. 3. Encourage private unregulated tank owners within Primary Zone to construct secondary containment areas under their storage tanks, and research funding opportunities to assist them in this endeavor. 4. Review Sandbourn Fire Insurance maps (if available) for the area to identify historic storage tanks.	2. BMMD 3. BMMD 4. BMMD
Natural Hazards (Forest Fire and Earthquakes)	1. Upgrade the pumping station reservoir houses with fire resistant materials. 2. Participate in Summit County's Hazard Mitigation Plan and address all mitigation actions for natural hazards through this process. 3. Coordinate and integrate the Source Water Protection Plan with the Summit County Community Wildfire Protection Plan.	1. BMMD 2. BMMD 3. BMMD
Structure Fire Runoff	1. Provide the Lake Dillon Fire-Rescue with a copy of Buffalo Mountain's Source Water Protection Plan and GIS data of the protection area. This will better equip the Lake Dillon Fire-Rescue to implement their appropriate protocols to prevent groundwater contamination from structure fire runoff in the area.	1. BMMD
Emergency Backup Power	1. Identify, plan, and budget for an emergency backup power supply. Providing backup power to BMMD's pumping stations would improve continuity of services during emergencies requiring large volumes of water, such as forest fires, which may disrupt normal power supplies. 2. Consider a cooperative review of emergency power capability as well as sharing the cost of an emergency generator with neighboring public water systems. This may create the possibility of accessing state or federal funds.	1. BMMD 2. BMMD
Emergency Interconnection with Silverthorne	1. Work with Silverthorne to complete interconnection plans and create formal agreement.	1. BMMD
Security/ Vandalism	1. Assess BMMD facilities according to the Water Sector Specific Plan – An Annex to the National Infrastructure Protection Plan and move forward accordingly. This could possibly include securement of Well #3.	1. BMMD
Noxious Weeds Treatment	1. Meet with the Summit County Weed Department to discuss vegetation management plans and BMP's within the SWPA and to provide them Emergency Response Cards.	1. BMMD

Integration with Other County Wide Plans	1. Multi-Hazard Mitigation Plan, and CWPP, Summit County Emergency Operations Plan - Emergency Support Function #12 Annex	1. BMMD
Conservation in light of drought and climate change	1. Education and awareness – brochures, possibly tiered water rates	1. BMMD
Non-Monitored Commercial Sites	1. Leverage the Summit County Office of Emergency Management to get more info through the Local Emergency Planning Committee (LEPC). 2. Meet with various industrial and commercial entities within the SWPA to raise awareness about source water protection and to distribute Emergency Response Cards.	1. BMMD 2. BMMD
Inter- Public Water System Communication	1. Update contact info and distribute	1. BMMD
General Plan Outreach	1. Present final SWPP to all stakeholders and water customers of the BMMD.	1. BMMD
Annual Review	1. Complete update every 3 years (or sooner if needed) and review of emergency contacts, water system maps and contacts on file with the Summit County Emergency Dispatch, and contingency plans.	1. BMMD

EVALUATING EFFECTIVENESS OF SOURCE WATER PROTECTION PLAN

The BMMD is committed to developing a tracking and reporting system to gauge the effectiveness of the various source water best management practices that have been implemented. The purpose of tracking and reporting the effectiveness of the source water best management practices is to update water system managers, consumers, and other interested entities on whether or not the intended outcomes of 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 year or if circumstances change resulting in the development of new water sources and source water protection areas, or if new risks are identified.

The BMMD 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.

REFERENCES

- Ground Water Protection Council. (2008). *Ground Water Report to the Nation: A Call to Action*. Oklahoma City, Oklahoma: Ground Water Protection Council.
- Summit County Tourism
- NRCS Rapid Watershed Assessment (2009), USDA, Blue Watershed Rapid Assessment Report, (www.http://www.nrcs.usda.gov/wps/portal/nrcs/detail/co/technical/?cid=nrcs144p2_062815)
- Summit County, CO (www.co.summit.co.us)
- United States Geological Survey Website (www.sciencebase.gov)
- Blue River Watershed Group (www.blueriverwatershed.org)
- Colorado Department of Public Health and Environment (www.colorado.gov)
- CCR Compliance (www.colorado.gov/cdphe/wqcompliance)

APPENDICES[3]

A. Source Water Assessment Report
B. Source Water Assessment Report Appendices
C. BMMD Drinking Consumer Confidence Rule (CCR) – 2015 Water Quality Report
D. U.S. Department of the Interior U.S. Geological Survey Analysis of Water Quality in the Blue River Watershed Colorado, 1984 through 2007
E. BMMD Infrastructure Evaluation, February 2015
F. Contingency Plan
G. Annex G, BMMD, Summit County Community Wildfire Protection Plan
H. Table A-1 Discrete Contaminant Types
I. Table A-2 Discrete Contaminant Types (SIC Related)
J. Table B-1 Dispersed Contaminant Types
K. Table C-1 Contaminants Associated with Common PSOC's
MOU Between CDPHE and U.S. Forest Service Rocky Mountain Region

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