10. Source Water Protection

The 1996 Amendments to the Safe Drinking Water Act directed states to develop a Source Water Assessment and Protection Program (SWAPP). The Colorado SWAP is administered by the CDPHE. The SWAPP encourages communities to be actively involved in strategies to ensure public drinking water sources are protected from all kinds of contamination. A source water protection plan (SWPP) is a tool to help ensure communities collect high-quality drinking water from surrounding watersheds. The steps in the SWPP process includes the delineation of the source water protection area (SWPA), an inventory of potential sources of water contaminants, a prioritization of those potential contaminant sources based on the volume of release, the likelihood of release, the proximity of the source waters, and the health hazard.

The inherent activities of wildland fire management are potential sources of source water contamination even though these actions are intended to protect human welfare, economic values, and ecological values. Vegetation-fuel treatments, wildfire suppression activities, and burned areas are potential sources for source water contamination. The types of potential contaminants delivered to surface waters resulting from vegetation-fuel projects depend on the type of treatment. For example, mechanical treatments may increase sediment loads to surface waters from soil-surface disturbances. Vegetation herbicide treatments could result in chemical contamination of surface waters. Prescribed fire may increase sediment and ash flows into surface waters. Wildfire suppression sources of contaminants may include increased sediment, debris, and ash flows into surface waters. The fire burned area or scar may also result in increased sediment, debris, and ash flows into surface water until vegetation is re-established. Burned areas can be especially susceptible to accelerated erosion from subsequent precipitation events for years after fire suppression. The degree of contamination would be a function of the size of the affected area, distance to surface water, remaining vegetation cover, terrain, soil erosion potential, subsequent precipitation, and management action taken to minimize impacts.

Several actions can occur to reduce the risks of source water contamination from wildland fire activities. BLM and the USFS would need to follow their fire management plans and resource management plan stipulations with regards to vegetation-fuel management, fire suppression, and post-fire stabilization. Private landowners should work with the CSFS, conservation district, or NRCS to address ways to protect water sources from wildland fire management on their properties. Additional caution such as installing site-specific erosion control devise around source water intake may be necessary during and after any wildland fire management activities.

An important step in the SWPP process is the delineation of Source Water Protection Areas (SWPAs). A SWPA is the watershed headwaters and streams that provide public water supply to the water intake source. The SWPA is then further defined based on community values and management issues. The SWPA is important because it is the area that requires priority protection from potential contaminates such as wildland fire management activities. A SWPA for a community may encompass both public and private lands.

Drinking Water Importance Areas include the measure of quality and quantity of public surface drinking water categorized by watershed. Garfield County falls within the Middle Colorado River Watershed. The

U.S. Forest Service Forests to Faucets project provides a wide array of drinking water data. Watersheds are ranked from 1 to 100 regarding relative importance to overall drinking water quality (100 being most important, 1 being least important). High important rankings highlight specific risks in Garfield County when implementing wildfire management activities. According to the Forests to Faucets Program, the majority of Garfield County falls within the low to medium ranked categories.





The state also developed an overall Drinking Water Risk Index to provide a measurement of risk to Drinking Water Important Areas based on the potential negative impacts from wildfire. In areas which experience low-severity burns, fire events can serve to eliminate competition, rejuvenate growth, and improve watershed conditions. But in landscapes subjected to high or moderate-burn severity, the post fire threats to public safety and natural resources can be extreme. Critical surface vegetation loss leaves forested slopes vulnerable to large-scale soil erosion and flooding during subsequent storms. These impacts threaten overall health, safety, and integrity of communities and natural resources downstream. The index for Garfield County lists the majority of the county in the "least Negative Impact" class, with the highest risk rating of seven applies to 2.7% of total areas in the county.



Figure 20: Drinking Water Risk Index in Garfield County

The Front Range Watershed Wildfire Protection Working Group developed a strategy to identify and rank watersheds importance to source water protection and evaluate the risks of catastrophic wildfire occurrence. Their approach would also be applicable when ranking Garfield County watersheds for source water protection. The methodology uses wildfire hazards, flooding or debris flow risk, soil erosion potential, and water use rankings to develop a composite score. The composite score categorizes watershed risk to wildfire damage from low to very high. The watershed comparative analysis can then be used to develop appropriate management plans compliant with the level of watershed risk. Initial attack strategies and/or vegetation-fuel treatments could be employed to reduce the potential for watershed damage from loss of vegetation cover and soil surface disturbance. Also, appropriate post-fire response plans could be put in place prior to a wildfire incidence that would identify specific treatments and locations that need to occur to protect streams and reservoirs from contamination. Such treatments could include emergency stabilization in strategic locations such as highly erosive soils and sediment control devices along critical streams and around reservoirs.

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