**RIFLE CREEK WATERSHED ASSESSMENT – A Brief Summary**

The purpose of the Rifle Creek Watershed Assessment is to evaluate the health of the Rifle Creek Watershed using water quality as the primary indicator. Interested parties can reference the full document at [www.midcowatershed.org](http://www.midcowatershed.org).

**Study Objectives and Methodology**
The objectives of this study were to characterize water quality impairments, identify the source(s) of impairments, and recommend Best Management Practices (BMPs) and projects that could mitigate water quality issues. A large suite of water quality parameters were examined between 2015 and 2017 at sites spread throughout the Rifle Creek watershed. We focused on four parameters of potential concern highlighted by the Colorado Department of Public Health and Environment.

**Results**
Overall, water quality in the Rifle Creek Watershed is generally good based on the full suite of parameters evaluated. Impairments exist for a few of the focus parameters described below. Water quality is best near the headwaters, degrading somewhat in a downstream direction, with the highest levels of degradation occurring in the urbanized portions lower in the watershed.

**Iron.** Sixteen out of 79 samples (20%) were above the state standard for total recoverable iron. Generally, mass loading of iron increased further downstream with the mainstem of Rifle Creek containing the largest amounts. Large iron loads lower in the watershed are tied to larger sediment loads and increased soil-water contact.

**Sulfate.** Twenty-five out of 78 samples (32%) were above the state standard for sulfate. Mass loading for sulfate was greatest in the mainstem of Rifle Creek. Results indicate that sulfate is being consistently and repeatedly introduced and removed from the water column along the elevational gradient.

**Arsenic.** All samples had arsenic concentrations that greatly exceeded the state water quality standard. This is judged to be a function of the stringent standard and local geology.

**Selenium.** Selenium was a parameter of major concern at the onset of this investigation. Results of this study indicate it to be minimal in its extent throughout the watershed.
Implications of Results
Further evaluation based on water quality results indicate that the stream and riparian areas of mainstem Rifle Creek could benefit the most from restoration or enhancement activities. In particular, work within the urbanized portions of the watershed may provide the greatest benefits as this is where the highest loadings of pollutants were measured.

Best Management Practices and Project Recommendations
A number of suitable project options exist in the watershed that would improve water quality. Various watershed stakeholders are already considering some of these projects. Following are the broad categories of recommended projects.

Stream / Riparian Restoration. By restoring riparian vegetation and stabilizing the stream banks and bed, erosion could be minimized while improving the floodplain’s capacity for sediment trapping and filtration. For example, several of the ranches along mainstem Rifle Creek, including Bryces Valley Ranch and Rifle Creek Ranch, would be great candidates for improved floodplain, stream channel and riparian zone health and function.

Irrigation Water Management. Increasing the efficiency of irrigation systems could help reduce surface and subsurface runoff, thereby decreasing the potential for sediment loading and soil contaminant leaching. Switching to more arid climate-adapted crops as well as residential xeriscapes would have this effect as well.

Constructed Wetland. In areas that can accommodate sizable detention structures, constructed wetlands could be used as natural water filtration systems. A possible site is located at West Rifle Creek State Wildlife area.

Off-highway Vehicle (OHV) Management. Limiting areas where OHV travel is allowed and their proximity to stream corridors will limit the availability of sediment and thus reduce erosion. One area in particular, the section of Government Creek inside of Hubbard Mesa OHV area, could benefit from this management action.

Grazing Management. Continued management of private and public lands to restrict livestock in areas with high erosion potential, including stream corridors, can greatly reduce streambank sluffing, erosion, and nutrient loading. Implementation of management controls on Butler Creek is an excellent example.

Education. Sharing results of this study with private landowners, municipal decision-makers, and resource professionals while providing recommendations on voluntary best management practices to improve water quality will give people the opportunity to take meaningful action.

Final Thought
It is hoped that, through this study, collaboration is encouraged that will advance some of the projects and management practices and thus improve water quality in the Rifle Creek watershed.