

10. Conclusions & Recommendations

10.1. Conclusions

The most prevalent impacts identified in the watershed are erosion, wildfires, livestock, and mine runoff. Based on a review of the South Platte and Upper South Platte Watersheds:

- Historic and current water quality problems are primarily a result of legacy mining activities, and future water quality problems are expected to reflect the shift in the economic base from mining to tourism and agriculture.
- Water quality information is improving, and problem areas are being identified and mitigated. If water quality information were more complete, problems in the watershed could be better understood and dealt with more effectively.
- The priority issues to address are agriculture, fire, land use and development, mining, recreation, transportation, water rights, water system operations, and weeds.
- The low-priority issues are solid/hazardous waste, spills/illegal dumps, stormwater runoff and underground storage tanks.
- Land ownership within the watershed is primarily by federal and state agencies. The Forest Service is the largest land manager, overseeing 51% of the land.
- Most of the growth has occurred and is expected to continue in the unincorporated portions of Park County.
- Population increases in Park County and Front Range communities caused an increase in demand for groundwater and surface water, which could have future impacts on water quality.
- The existing capacity at most wastewater treatment plants is sufficient to meet needs through at least 2025.
- Drinking water quality in Park County is good except for some minor exceptions.

10.2. Recommendations

The Upper South Platte Watershed needs to see more collaboration between federal agencies, state agencies, conservation districts, county agencies and non-profits. No one entity has all the answers and we must be willing to sit together and have professional discussions to move projects forward and to protect communities, habitat, and water quality.

The other need is simply education to landowners and communities. It is important understand the pre and post effects of fires on forest health and water quality. And understand the impacts that recreation can have on sediment that winds up in waterways and impacts aquatic habitats.

The recommendations listed below require funding opportunities such as grants and contributions from other organizations.

10.3. Table: Summary of Recommendations

Location	Primary Problems	Recommendations ^{1,2}
Middle Fork of the South Platte	Historic mining activities; Potential Recreational and Urban and Construction impacts.	Implementation of Mining BMPs (includes possible reclamation work); Water quality data collection upstream and around Alma.
South Mosquito Creek and Mosquito Creek	Historic mining - Montgomery Mill, London Mill, London Extension Tunnel, Buckskin Gulch	Mining BMPs; TMDL developed and continued to be implemented.
Trout Creek	Nutrients	Assess nutrient concerns
Mainstem of the South Platte	Hayman wildfire damage; Heavily logged; Erosion (extensive work was conducted to address these concerns).	Evaluate effects of fire on existing TMDL; Fire restoration; Agriculture BMPs; further research into erosion problems in sheep creek; Public outreach.
Tarryall Creek	Poor agriculture practices	Implementation of Agriculture BMPs; Public outreach; Conservation easements were developed over past several years; Collection of suspended sediment data.
North Fork of the South Platte	Acid mine drainage especially from abandoned/inactive mines around Geneva Creek; movement of tailings	Mining BMPs (includes possible reclamation work).
Badger Creek	Poor grazing practices	Outreach efforts with landowners; Agriculture BMPs;
Three Mile Creek	Poor Grazing Practices	Agriculture BMPs; outreach efforts
Peatlands	Peat mining	Seek funding for identification; further studies; monitoring;
Notes:		
¹ Possible mining BMPs, listed in the current Colorado NPS Management Program are through Hydrologic Controls such as Diversion ditches, mine water removal and consolidation of stream diversions, bulkhead seals, and revegetation; and through passive treatment such as settling ponds, sulfate reducing wetlands, aeration, dilution, and land application.		
² Possible Agriculture BMPs, listed in the 2012 Colorado NPS Management Program are soil stabilization of grazing lands, grazing management, soil stabilization in riparian areas, irrigation water management and nutrient management.		

10.4. Total Maximum Daily Loads (TMDLs)

Assist in the review and evaluation of TMDLs for stream sections currently listed on the 303d

list and implementation of developed TMDLs .

The TMDL previously developed for the mainstem of the South Platte should be reviewed for fire impacts since it was completed right before the Hayman Fire.

10.5. Surface Water and Groundwater

Continue monitoring local phosphorous loading. This includes future monitoring and sampling at the East Portal of Roberts Tunnel for phosphorous.

Work with the USGS to update the previous streamflow and water quality data report which analyzed water quality conditions based on 1962 - 1998 data (Water Resource Investigation Report 01-4034).

Develop a report to petition the EPA to designate the South Park Aquifer as a source water protection area according to <https://www.epa.gov/dwssa/guidance-petitioning-sole-source-aquifer-ssa-designation>. The report should be based on the EPA Sole Source Aquifer Designation Petitioner Guidance, which provides procedures and criteria for proposing aquifer boundaries, determining whether an aquifer is the sole or principal source of drinking water, and evaluating alternative sources of drinking water.

Work with the USGS, Park County, and interested stakeholders to improve the existing surface water- and groundwater-monitoring network. The surface water monitoring program should evaluate:

- Presence of natural background levels and pollutants related to historic mining activities in the Middle Fork and its tributaries and the North Fork and its tributaries, including a location at the point of exit from Roberts Tunnel at the North Fork of the South Platte;
- Presence of dissolved uranium, radium 221, radium 228;
- Future locations for water quality monitoring stations.

Develop baseline groundwater quality conditions prior to any oil and gas drilling or uranium mining.

Assess the need to develop well-head protection zones and plans for residential areas that rely on groundwater as a source of drinking water. This should be based on development patterns and a review of the USGS Groundwater Report (2007). Areas that should be considered in this

analysis are the groundwater supply intake for Camp ID-RA-HA-JE, Campground of the Rockies Association, Deer Creek Elementary School, Platte Canyon High School, Florissant Fossil Beds National Monument, Town of Fairplay, and areas that rely on the South Park aquifer. This should include a review of the completed CDPHE Source Water Assessment Protection Plans.

Assess available data to evaluate the need for mitigation systems to reduce radon levels.

10.6. Agriculture

Continue to work with the ranching community to develop sustainable practices, and planning and implementation, including developing fencing for riparian areas.

Implement BMPs to reduce water quality impact from agriculture activities.

10.7. Suspended Sediment

Collect additional suspended sediment data on tributaries to the South Platte River and North Fork of the South Platte River. This will provide critical information to evaluate those segments currently listed on the 2018 303(d) List and/or Monitoring and Evaluation List.

Mechanisms such as BMPs should be researched to address current and potential future sources of sediment in areas identified in the 208 Plan: Badger Creek; Sheep Creek; stream corridors on BLM and State Land Board property where there are grazing allotments; and South Fork, Middle Fork, and North Fork of the South Platte.

10.8. Silviculture

Controlled burns should be used to clear excessive ground debris, encourage new growth, and decrease the severity of wildfires. Controlled burns also decrease erosion and protect water quality. These actions are especially critical given the number of wildfires that have occurred over the past several years.

Implement forest management BMPs (CNPSC, 2002), such as proper timber harvesting, woodland thinning or pruning for tree health, and recreation area management strategies. Work with the state and federal forest service agencies and universities to integrate research, monitoring, and management.

Continue watershed restoration efforts in areas affected by the Schooner and Hayman fires.

10.9. Peatlands

Investigations should be conducted to determine the effects of mining on peatlands and how it effects downstream and reservoir water quality. Information should also be collected on hydrologic behavior, monitoring, preservation, and protection.

10.10. Mining

The impact of the mining activities and reclamation work east of Alma should be evaluated to determine what, if any, additional BMPs or reclamation strategies might be needed. Similarly, other stretches of the Middle Fork of the South Platte are impacted by legacy or current mining activities should have appropriate entities identified in order to evaluate the needs and implement appropriate BMPs and reclamation efforts.

10.11. Transportation

Identify BMPs for proposed new road construction and maintenance, determine if existing roads have water quality impacts, and develop mitigation strategies.

Minimize the use of deicers such as methylene chloride except where necessary, and minimize the use of sand except at locations where it is absolutely necessary for safety concerns.

10.12. Stormwater Runoff

Although a point source issue managed under MS4 stormwater permit requirements, minimizing the effects of stormwater runoff passing through municipal, commercial, and residential development areas and, if necessary, implement BMPs to mitigate adverse effects before runoff discharges into local streams. This is especially critical in the more urban areas such as Fairplay, Alma, Bailey, etc. The promulgation of NPDES Phase II regulations currently does not affect Park or Teller Counties but could in the future.

10.13. Onsite Wastewater Treatment Systems (OWTS)

Produce and mail educational material to new homeowners on the proper operation and maintenance of septic systems and on opportunities to be involved in groundwater monitoring.

Encourage cluster development and the strategic placement of residential structures in order to protect wetlands and wildlife/habitat corridors.

Data from the USGS (2007) indicates OWTS density and year of installation are related to groundwater quality. An electronic database should be developed to track OWTS installation

and maintenance that contains installation date, maintenance, problems/issues, and soil stratigraphy. This information, along with recommendations made through the CDPHE OWTS Working Groups, should be assessed to determine if it is reflected in current county OWTS regulations.

10.14. Water Quality Management Association

Formation of a WQMA is still recommended in the South Platte River Basin. The specific responsibilities of the WQMA and the participants are outlined in the 208 Plan. The CUSP is actively involved in water quality concerns and protection strategies but has no regulatory authority. A strategic plan developed by the CUSP outlines the critical importance of addressing the current and future problems and issues in the watershed.

The formation of the South Platte WQMA should be a cooperative effort based on the overlapping jurisdictions within the region. This could be accomplished through the coordinated efforts of the Upper South Platte Water Conservancy District, the Central Colorado Water Conservancy District, and the Park County Land and Water Trust Fund Board. The Trust Fund Board is a seven-member advisory to the County Commissioners. It was created in 1997 and is charged with the preservation, protection, acquisition, improvement, and maintenance of water resources in Park County. The South Platte WQMA could consist of the entities listed below and act as the designated management agency for the watershed. PPACG should assist in the development and support of the water quality management agency and provide technical and administrative assistance to the management agency when formed.

The proposed South Platte WQMA should include:

- Park County Board of Commissioners
- Teller County Board of Commissioners
- Upper South Platte Water Conservancy District
- Central Colorado Water Conservancy District
- Town of Fairplay
- Fairplay Sanitation District
- Town of Alma
- Bailey Water and Sanitation District
- Will-O-Wisp Metropolitan District

- City of Woodland Park
- Florissant Sanitation District
- Divide Water & Sanitation District
- Teller County Water and Sanitation District
- Federal Land Management Agencies
- State Land Board

The WQMA should assume the following responsibilities and include the following functions:

- Assure point and nonpoint water quality concerns in the watershed are being evaluated;
- Assure water quality planning in new developments in the watershed is consistent with the 208 Water Quality Management Plan;
- Recommend or encourage consolidation of wastewater facilities and operation and maintenance functions among entities in the watershed where appropriate;
- Work on water quality planning issues such as source water protection programs and Total Maximum Daily Load (TMDL) allocation studies;
- Review proposed changes to the existing stream-monitoring network;
- Review and comment on discharge permits;
- Develop a fee structure to ensure participation in water-quality-related projects such as new or additional monitoring stations.

10.15. Coalition of Upper South Platte (CUSP)

Forestry, water quality monitoring, river restoration and forest ecological restoration work are never ending. There is more than enough work in the Upper South Platte Watershed to sustain CUSP for many years to come. The sticking point as with any non-profit is funding. CUSP is grant funded and must continually seek grant funding on an annual basis and there is a lot of competition for grant funding. The future answer lies in a large endowment that will allow us to continue our work and not always have to work about funding. However, this type of funding mechanism is not readily available.