Watersheds

In Colorado, many towns and cities depend on surface water collected from forested watersheds for their domestic public water supply. Throughout Colorado, forest lands act as collectors of clean water. Protecting these sources of clean water is the responsibility of forest landowners, forest managers and timber operators. Best Management Practices (BMPs) are guidelines that should be used to direct forest activities that protect natural resources including water quality.

Areas of land called watersheds (center photo) collect precipitation and funnel it through a network of stream channels. Logging, road construction and other forest activities can disturb vegetation and soil which may cause erosion and release sediment downstream.

Perennial and intermittent streams and ephemeral areas are often found in forested watersheds (note these in photo).

Ephemeral areas drain water to intermittent stream channels, which carry the water to perennial streams, which flow to the watershed outlet. Sediment is fine particles of soil, sand and pebbles carried by moving water and later deposited when the flow slows or stops such as in eddies or where a stream enters a lake or pond. Any sediment created by soil erosion during logging or road building activities can be carried by way of ephemeral, intermittent, and perennial stream channels to the watershed outlet.

Ephemeral areas generally occur above the upper reaches of intermittent streams. Since they can direct water into intermittent stream channels, care should be taken to minimize disturbing soil in these areas.

Roads, skid trails, and landings can act as man made stream channels carrying sediment when improperly planned, located or constructed. If BMPs are not followed, sediment can make its way to the watershed outlet, creating problems downstream.

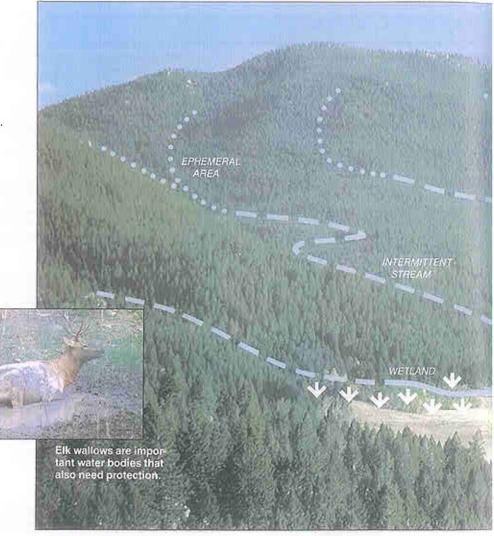
Wetlands found within a watershed include seeps, springs, wallows, marshes, bogs and riparian woodlands. Some drain into streams, others do not. Even when dry, they can generally be identified by the presence of certain plants. These areas should receive protection when forest activities occur in or around them



Disturbed soils in ephemeral areas can be carried downhill during heavy rainfall or snowmelt.



Whether wet or dry, intermittent streams generally have gravel or sandy bottoms and identifiable banks. They connect ephemeral areas with perennial streams.



Across all of Colorado, damage to intermittent beds and banks results in sediment being carried to perennial streams during high flow periods.

Perennial streams are important water sources. They must be kept free of sediment and large woody debris from logging or road construction. Sufficient shade should also be left along streambanks to protect water temperature.





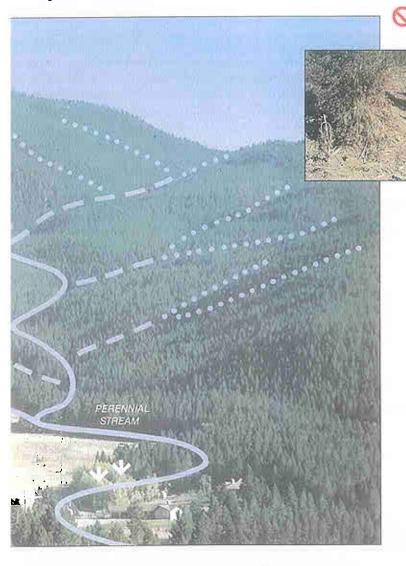
PERENNIAL STREAM



Sediment from ephemeral areas often collects in perennial streams resulting in downstream impacts.

Ephemeral areas used as skid roads can contribute to stream sediment. Avoid skidding up or down these areas.

ree harvesting and other forest management activities such as site preparation and road construction can have minimal impacts to forested watersheds if conducted with careful regard to soil and water resource quality. However, poor logging practices can cause excessive erosion. Excessive disturbance of the vegetation and topsoil on the forest floor destroys its filtering capacity and soil compaction affects surface water infiltration. When surface water is allowed to flow onto roads and trails, they become man-made stream channels. Runoff increases in speed and volume as it flows downstream. Concentrated runoff undermines slopes tearing away the soil, destroying roads, overloading streams with sediment, damaging stream-banks, and destroying aquatic habitat.

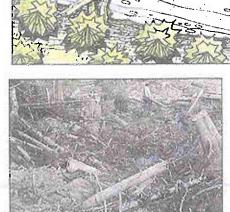


Springs, swamps, seeps, marshes, and bogs all contribute to the watershed collection systems and require protection.





WETLANDS



sedimentation into streams can increase filtering costs for drinking water, interfere with irrigation systems and increase flood potential. Fish eggs laid in stream gravel that are later

buried with sediment will suffocate. Removing shade from stream sides can raise water temperatures which affects fish and other aquatic life. Streamside damage also affects stream stability which impacts the wildlife that rely on these habitats.

Why protect water quality? Excessive runoff and

Ignoring BMPs can result in damaged streams, unhappy downstream

neighbors and restoration measures.