

Ground Water Quality and Flow

► Aquifers

- ◆ There are six aquifers in and near the proposed mining in Area F:
 - 1) Robbie Creek alluvium,
 - 2) Donley Creek alluvium,
 - 3) Black Hank Creek alluvium,
 - 4) Rosebud coal bed,
 - 5) McKay coal bed, and
 - 6) Sub-McKay sandstone.
- ◆ Western Energy's proposed mining plan for Area F will disturb alluvium associated with Donley Creek and Black Hank Creek (2 & 3).
- ◆ Western Energy intends to mine the Rosebud coal (4), but not the McKay coal (5).

► Ground Water Quality

- ◆ Groundwater quality of the Colstrip region is highly variable.
- ◆ Water quality investigations in and near Mine Area B in the 1970s concluded that waters from springs and water wells varied greatly in degree and type of mineralization.
 - No parameter was dominant in water from any particular aquifer, depth or locale;
 - Calcium, magnesium and sodium occurred in many different proportions regardless of the total concentration of dissolved solids;
 - Sulfate was the major anion in most waters; and
 - Bicarbonate concentration often equaled or exceeded sulfate concentrations for water containing less than 1,000 mg/l of dissolved solids.
- ◆ Groundwater samples have been collected by Western Energy from several wells in or adjacent to Area F (See map on Surface Water Quality and Flow display for locations).
- ◆ Geochemical differences in aquifer materials would be the general factor determining differences between premining and postmining groundwater quality.

► Groundwater Recharge

- ◆ There are several mechanisms by which groundwater could be recharged in Area F.
 - General infiltration of precipitation and snowmelt into underlying soils with possible subsequent movement to groundwater systems.
 - Infiltration of water from point and line sources. Local concentration of snow and rain in topographic lows and small ephemeral drainages could cause small areas to act as sources of groundwater recharge.
 - Infiltration into outcrops of highly permeable clinker.
 - Infiltration of water from streams into underlying and adjacent geological strata.