Geochemical, isotopic and hydrogeologic data were used to investigate acid rock drainage (ARD) in the vicinity of three waste rock dumps at the Sullivan Mine, British Columbia. Hydrogeologic data were used to define hydrostratigraphic units for the area and to calculate average hydraulic conductivity values for each of these units. The majority of the surficial deposits in the vicinity of the mine have relatively low hydraulic conductivity values; however, a gravel unit of limited lateral extent has a hydraulic conductivity value of up to three orders of magnitude higher than the other units. This unit likely represents a permeable pathway for ARD waters. Groundwater and surface water samples were collected both up-gradient and down-gradient of the three waste rock dumps for geochemical and isotopic analysis during the late spring of 1999 and 2000. Geochemical results indicate that the waters range from Ca-HCO$_3$ rich (background) to Zn-SO$_4$ rich (ARD). The geochemical characteristics of water samples showed a spatial correlation between the location of the sample with respect to the waste rock dumps (distance and location within the hydrostratigraphy). In particular, water samples closer to the waste rock and those taken from within the more permeable gravel unit, have a larger component of ARD water (Zn-SO$_4$ rich). The Pb isotopic compositions of water samples define a mixing line between the homogeneous Pb isotopic signature of the Sullivan ore and at least one other more radiogenic end member (background). This end member may correspond to Pb aerosols that have infiltrated the local surficial deposits or may derive from the surficial deposits themselves. The Pb isotopic composition of water samples becomes increasingly similar to background Pb with increasing distance from the waste rock dumps, indicating mixing between background and ARD waters. The $\delta^{18}$O and $\delta^2$H isotopic results fall along an evaporation trend line that suggests mixing between waters from evaporative sources with waters from meteoric sources. This indicates that there is a good connection between the groundwater and surface water regimes at the mine site.