

Groundwater tracing in mine pools above the Cabin Creek oilfield in Kanawha County, West Virginia¹

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Abstract. The saline aquifers of the Kanawha River Valley and hydrocarbons of Cabin Creek oilfield represent an upwelling of deep fluids in Kanawha County, WV. Just south of the city of Charleston these deep fluids intersect shallow mine pool aquifers in various coal beds of the Kanawha Formation. The West Virginia Department of Environmental Protection and the Office of Surface Mining Reclamation and Enforcement conducted ground water sampling of mine pools and other groundwater sources around the historic Cabin Creek oilfield. Chemical analyses of the mine pools and flow-path interpretation show an interaction and mixing of acid mine drainage, alkaline mine drainage and deep source brines and hydrocarbons of considerable complexity. Using cation and anion ratios and trace element tracing, a set of geochemical maps of this area was produced. This analysis helped segregate and identify deep and shallow ground water and surface water sources in this rather unique geohydrologic system.

Additional Key Words: Mine Pools, Acid Mine Drainage, Brine

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