



west virginia department of environmental protection

Prenter Road Hydrologic Study Fact Sheet

Purpose of the study

To determine what human activity, including coal mining and ancillary activity, may have negatively affected the quality of groundwater being used as a drinking water source by residents of the study area. The study area includes all residences along Hopkins Fork of Big Coal River and tributaries of Hopkins Fork from Seth to Prenter, Boone County, West Virginia.

Who conducted the study

- Triad Engineering of Scott Depot, West Virginia.

Basic scope of the study

- Study began in December 2010
- Two public meetings took place in the community
- Visited more than 100 homes and obtained permission to collect samples from 33 domestic wells
- Conducted interviews of residents and property owners regarding their perception of their water quality
- Collected samples from surface water, such as rivers, streams or ponds; groundwater, which is the water below the surface that supplies wells and springs; mine discharges; valley fill discharges and coal slurry

What the study says about geology and groundwater

- Groundwater in the area migrates or moves through fractures and mine voids, which is typical of coal field areas
- The area can be characterized as having a series of “hydrologic islands” that are separated by surface water streams. So each flow system is separate from the one next to it. Which means that wells that get water from one flow system can have a different chemical characteristic from another one that is relatively nearby

What the study says about groundwater chemistry

- Two of the domestic wells located in the Hopkins Fork Watershed, adjacent to a reclaimed surface mine operation, showed the greatest evidence of mine-related impact. They have elevated sulfate, iron, manganese and aluminum, but further investigation would be needed to confirm or refute the potential mine-related impact. The owners of these two wells reported that they do not use them for drinking water.
- Aluminum in domestic wells exceeded the secondary standard in one sample.
- Manganese in domestic wells exceeded the secondary drinking water standard in 12 of the 33 wells (36 percent).
- Iron in domestic wells exceeded the secondary standard in 12 of the 33 wells (36 percent).
 - For comparison purposes, the US Geological Survey found that in the Kanawha River Drainage Basin, which also includes the Coal River basin and the study area, 40 percent of the wells exceeded the secondary standard for iron and 57 percent exceeded the secondary standard for manganese.
- All slurry-related samples and valley fill samples exceeded the 250 milligram per litre secondary drinking water standard for sulfate.
- Eleven of 15 mine-related samples exceeded 250 milligrams per litre for sulfate.

Conclusions of the study

- The investigation did not identify evidence of widespread human-induced impacts to groundwater quality in the Prenter Road area.
- Two domestic wells, located in Hopkins Fork Watershed, adjacent to a reclaimed surface mine operation exhibited the greatest evidence of being affected by mining.
- Determined that complaints regarding odors and coloration are most likely related to iron and sulfate metabolizing bacteria, rather than human impacts. Of the 13 residents with complaints about odor associated with their water, only four samples actually contained elevated sulfate levels. Iron and sulfate metabolizing bacteria commonly cause reddish-orange, slimy-looking deposits inside toilet tanks, water softeners and other plumbing fixtures. Magnesium corrosion control rods present in many hot water heaters can chemically reduce sulfates to hydrogen sulfide, causing a rotten-egg like odor.

- No evidence of commercial/industrial contamination from sources such as gasoline stations, drycleaners or manufacturing facilities.
- No evidence of impacts from natural gas drilling and production.
- No evidence that leachate from the Boone County Landfill is affecting groundwater.

****Primary Drinking Water Standards are enforceable standards based on potential health risks.***

**** Secondary Drinking Water Standards are non-enforceable guidelines regulating contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water. EPA recommends secondary standards to water systems but does not require systems to comply.***