Keyser Avenue Borehole
Scranton, Pennsylvania
Region 3
PAD981036049

Site Exposure Potential

The Keyser Avenue Borehole is on a residential property in Scranton, Pennsylvania (Figure 1). The borehole was originally used in conjunction with coal mining operations (EPA 1987). In 1984, the Pennsylvania Court of Common Pleas found that, between 1976 and 1979, William Lavelle had dumped 13.2 million liters of liquid wastes into the borehole via a floor drain in a rented commercial garage. Approximately 6.8 million liters were food processing wastes and approximately 5.3 million liters were from the solvent recyclers, Spectron and Marisol (Hornberger et al. 1983). The remaining 1.1 million liters of wastes were from five smaller waste generators: two generated mixed solvent wastes, two generated "undescribed waste," and one generated aqueous pharmaceutical wastes.

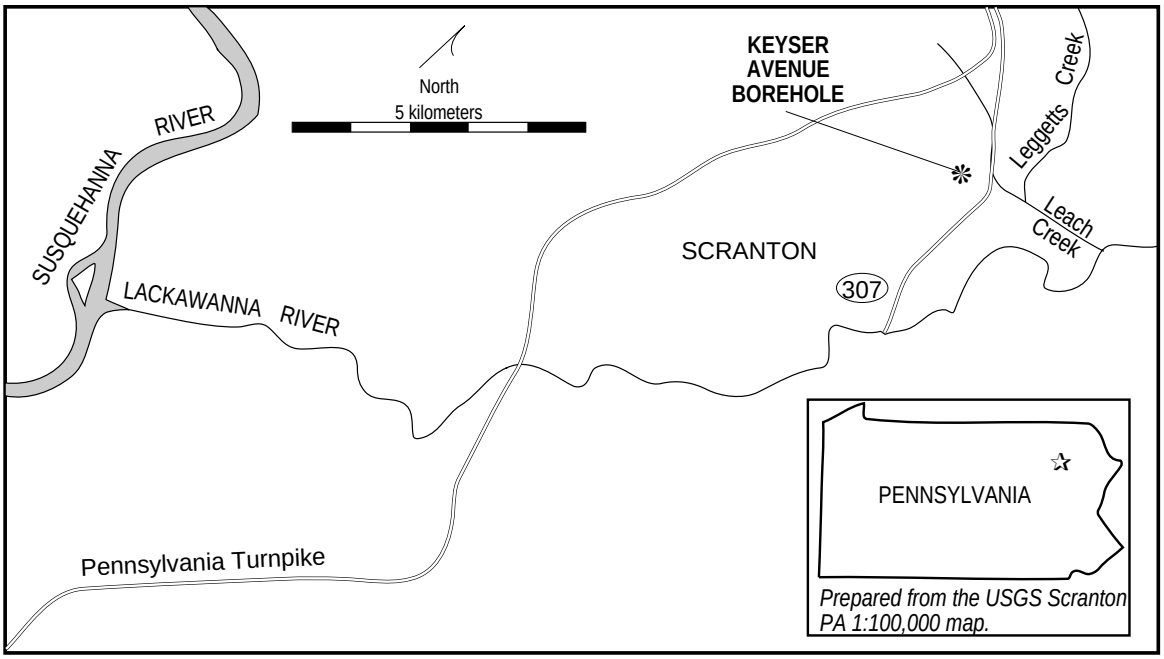

Figure 1. The Keyser Avenue Borehole site in Scranton, Pennsylvania.

The site is 265 meters above mean sea level (MSL) on the northwestern slope of a valley trough (Hornberger et al. 1983). The Lackawanna River flows through the valley at 212 meters above MSL. The borehole is 0.6 meters in diameter and 33 meters deep, with a mine pool 46 meters beneath the bottom of the borehole. Other pools in the area hold a combined total of 38 million liters of water. In the mine pool, fluids flow south through interconnections in the adjoining abandoned underground mines toward the two major overflows from the mine pool complex. These two overflows, Old Forge Borehole and the Duryea Ditch, are 11 km and 13.5 km, respectively, down the Lackawanna River from the site.

The closest surface water is Leach Creek, 0.5 km east of the site. Leach Creek runs 1 km before discharging into Leggetts Creek, which meets the Lackawanna River 1.5 km farther

on. The river flows for 21.5 km before it discharges into the Susquehanna River. The Susquehanna River enters Chesapeake Bay 300 km below the confluence of the two rivers.

A possible contaminant migration pathway to NOAA resources is the movement of water through the underground mine passages to the Old Forge Borehole and Duryea Ditch overflows, which discharge into the Lackawanna River.

Site-Related Contamination

The contaminants of concern to NOAA are VOCs (Hornberger et al. 1983). Four of the contaminants were measured in liquids collected at boreholes downgradient from the site at concentrations exceeding LOEL (Table 1). The major part of the contamination appears to be spread southeast 450 meters downgradient from the site. The comparison of contaminant values from the liquid waste in the borehole with LOEL values is valid since the waste is mixed with groundwater that discharges into the Lackawanna River 11 and 13.5 km downstream of the Keyser Avenue Borehole site.

Table 1. Maximum concentrations of selected contaminants at the Keyser Avenue Borehole site (Hornberger et al. 1983); AWQC for the protection of freshwater aquatic life (EPA 1986); concentrations in μg/l.

		AWQC	
Contaminant	Liquid Waste (Borehole)	Acute	Chronic
1,1,2,2-tetrachloroethane	24,000	N/D	2400*
trichloroethylene	11,000	45,000*	21,900*
tetrachloroethylene	17,000	5,280*	840*
1,2-dichloroethane	8,600	118,000*	20,000*
toluene	18,000	17,500*	N/D
chloroform	7,500	28,900*	1,240*

*LOEL; N/D: Criteria not determined

NOAA Trust Habitats and Species in Site Vicinity

The closest resources of concern to NOAA are American shad and American eel in the Susquehanna River, 4.5 km from the site. A series of dams on the lower Susquehanna River blocks the passage of fish into the upper reaches near the site. However, American shad and American eel are trapped below these dams and stocked above the dams on the Susquehanna. The Susquehanna River Anadromous Fish Restoration Committee, of which NOAA is a member, has revived interest in restoring natural shad runs to the river. In 1986, construction was ordered for a new fishway and improvements in an existing, inadequate fish lift for the dams (Goodger 1987). Once the fishways are complete, there should be increased use by NOAA resources of the Susquehanna River in the vicinity of the Lackawanna River.

American eel are present in the lower reaches of the Lackawanna River, but are not usually found upstream in the vicinity of the site. Water quality in this stretch of the river has been degraded by sewer line overflow and heavy mining activity.

Response Category: Federal Fund Lead

Current Stage of Site Action: RI/FS Workplan

EPA Site Manager

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References

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EPA. 1986. Quality Criteria for Water. Washington, D.C.: Office of Water Regulations and Standards, Criteria and Standards Division. EPA 440/5-86-001.

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Goodger, T., ecologist, Habitat Conservation Branch, NOAA National Marine Fisheries Service, Oxford, Maryland, personal communication, June 1987.

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