WATER QUALITY AND USE

Beneficial Use Attainment

The Missouri Department of Natural Resources and the Clean Water Commission are responsible for setting and enforcing the water quality standards for Missouri. These standards have specific acceptable ranges for several indicators of water quality, such as pH range of 6 to 9, fecal coliform levels not to exceed 1,000 colonies per milliliter, and nitrate levels of 10mg/l or less for drinking water supplies. Dissolved oxygen concentrations for cool and warmwater fisheries should not fall below 6 parts per million (MDNR 1996)

In the lower subbasin, the Black River and Cane Creek are classified for whole-body contact recreation (MDNR 1986). Whole-body contact recreation includes activities such as swimming, water skiing, and skin diving, where raw water may be accidentally ingested and sensitive organs, such as the eyes, ears, and nose, will be exposed to it. In the upper subbasin, Logan Creek, Clearwater Lake, the Black River, and all three forks of the Black River are classified as whole-body contact.

Section 303(d) of the Federal Clean Water Act requires states to list waters not expected to meet established state water quality standards (MDNR 1998). There are three listed streams in the Black River basin. In the lower subbasin, the Poplar Bluff waste water treatment plant degrades approximately five miles of Main Ditch, where both biological oxygen demand and non-filterable residue standards are not met. In McKenzie Creek, low pH waters from the Gads Hill Quarry degrade approximately ½ mile of creek. In the upper subbasin, nutrients from the Doe Run West Fork Mine degrade 0.2 miles of the West Fork of the Black River. For additional information on 303(d) streams in Missouri go to: http://www.dnr.state.mo.us/wpscd/wpcp/nps/index.html

Water Quality

Good water quality is generally shared throughout the Ozark portions of both subbasins. However, approximately 30% of the wells in the lowlands exceed water quality standards for nitrates (MDNR 1995). One percent of the wells also exceed pesticides standards (MDNR 1995).

Fish Kills and Pollution Incidents

There have been fourteen confirmed pollution incidents in the Black River basin since 1989 (Table 5). The incident causing the largest recorded fish kill occurred in McKenzie Creek, where 27,000 fish, primarily minnows, died.

MDC has collected fish for contaminant analysis from several locations in the watershed. The Missouri Department of Health reviews the contaminant analyses and, if necessary, issues consumption advisories. There have been no advisories issued for any particular streams or lakes in the basin. However, because of mercury contamination, the Department of Health has issued an advisory for all lakes and streams in Missouri stating that women who are pregnant, or may become pregnant or whom

are nursing and children 12 years of age or younger should not eat any largemouth bass more than 12 inches (MDC 2003).

Water Use

In the basin, 190 million gallons per day of water, primarily from groundwater sources (96%), are used for public consumption, irrigation, livestock, industry, or mining (http://water.usgs.gov/cgi-bin/wuhuc?huc=11010007). The majority of water is used for irrigation (86%) and mining (9%) purposes. Approximately 102,000 acres of land are irrigated.

Nonpoint and Point Source Pollution

In both subbasins, soil erosion rates have been significantly reduced during the past 15 years (personal communication, Mark Nussbaum, Natural Resources Conservation Service). The basin's sheet erosion (½ to 1½ tons/A/year) and gully erosion (0 to 0.16 ton/A/year) are not considered a serious problem (MDNR 1995). In the lowland section of the subbasin, nutrient and pesticide runoff from agricultural lands are more likely to impact water quality than point sources (MDNR 1995).

Point sources are those which discharge waste water into waters of the state and must obtain a National Pollution Discharge Elimination System (NPDES) permit. The MDNR issues and monitors these permits throughout Missouri.

In the basin, there are 16 public and 29 private wastewater treatment plants. The largest wastewater treatment plant is at Poplar Bluff with an estimated discharge of 2.9 million gallons per day. For information regarding the location and discharge of other NPDES permits, go to http://www.dnr.state.mo.us/wpscd/wpcp/permits/reports/wpcpermits-reports.htm

Six active lead mines are present in the watershed, all of which are located in the upper subbasin (Table 6) (http://www.dnr.state.mo.us/wpscd/wpcp/permits/reports/wqcounty.pdf). These mines discharge a combination of groundwater that has seeped into the mine and mill water, which is used to separate lead ore from the surrounding rock. Typically, some of the mine water is discharged directly into streams and may contain elevated nitrogen levels due to use of explosives in the mines. Remaining mine water is diverted into mill ponds and used in the milling process. During the milling process, rock is crushed and the lead is removed by a series of flotation process using water and organic chemicals. Mill waters are usually recycled but there is some discharge into the streams. This discharge is rich in nitrogen and phosphorous, which causes excess algae growth downstream of the mill pond.

The presence of enormous amounts of tailings (finely ground rock) stored behind dams in several basin streams represents a substantial threat in the form of sediment pollution and lead contamination to aquatic life. Failure of these dams would allow large quantities of tailings to quickly enter basin streams.

Table 5. Summary of pollution incidents in the Black River basin.

Stream	Date	County	Severity	Est. Number of Fish Killed	Monetary Value	Cause
Lower Subbasin						
McKenzie Creek	6/19/90	Wayne	Severe	27,253	$6,433.13	Ammonia
McKenzie Creek	2/8/91	Wayne	Light	None	---	Diesel Fuel
Tenmile Creek	6/10/91	Butler	Moderate	4,490	$2878.30	Unknown
McKenzie Creek	3/4/92	Wayne	Light	Unknown	---	Unknown
Black River	10/15/92	Butler	Heavy	Unknown	---	Organic
Black River	6/7/94	Butler	Unknown	Unknown	---	Diesel Fuel
Black River	10/6/94	Butler	Unknown	Unknown	---	Enriched water
Cane Creek Trib.	6/26/96	Butler	Light	Unknown	---	Dewatering
Cane Creek	6/18/98	Butler	Unknown	Unknown	---	Unknown
Upper Subbasin						
WF Black River	5/5/89	Reynolds	Light	115	$15.50	Spawning stress
Doe Run Creek	3/18/92	Reynolds	Unknown	Unknown	---	Creosote
WF Black River	6/16/92	Reynolds	Unknown	Unknown	---	Mining effluent
Clearwater Lake	5/22/97	Reynolds	Light	400	$982.68	Spawning stress
EF Black River	8/15/98	Reynolds	Light	Unknown	---	Turbid water

Source: MDC files

Table 6. Lead mines in the Black River basin.

Facility Name	MDNR Facility ID Number	Stream Discharge
Doe Run Sweetwater Mine	MO0001881	Adair Creek
Doe Run Brushy Creek Mine	MO0001848	Bills Creek
Doe Run Buick Mine	MO0002003	Strother Creek
Doe Run Fletcher Mine	MO0001856	Bee Fork Creek
Doe Run West Fork Unit	MO0100218	West Fork Black River
Cominco Magmont Mine	MO0001872	Neals Creek