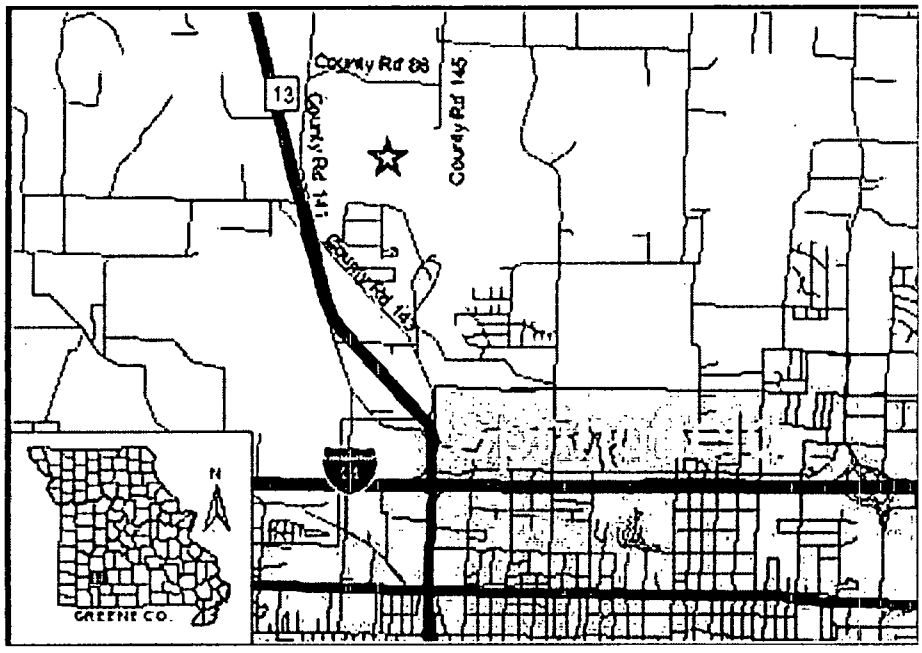
Fulbright Landfill



Site Name: Fulbright Landfill

Classification: Class 3

Date of Placement: January 15, 1984

Site Address: Highway 13, north of the Springfield, Greene County, city limits. Adjacent to an inactive northwest sewage treatment plant on Bolivar Road SE 1/4, Sec. 35, SW 1/4, SW 1/4, Sec. 36, T. 30N, R. 22W, and NE 1/4, NE 1/4, NE 1/4, Sec. 3, T. 29N, R. 22W, Ebenezer Quadrangle

Present Property Owner: City of Springfield

Lead Agency: EPA

Waste Type: Cyanide, acids, plating residues (cadmium and chromium), heavy metals, trichloroethylene (TCE), paint, waste oil, and pesticide (pyrethrum) residues

Quantity: Not determined

Site Description:

Fulbright Landfill is located in the South Dry Sac River flood plain just north of Springfield. The city of Springfield operated the landfill from 1962 to 1968 to dispose of municipal and local industrial waste. In 1967, one person died from cyanide poisoning while unloading incompatible wastes at the landfill sludge pit. Another person was nearly overcome by fumes while covering the sludge pit.

The landfill is located east of Highway 13 and next to the Sac River Landfill. The U.S. Environmental Protection Agency (EPA) has addressed monitoring of both landfills as a single site.

Environmental Problems and Areas of Concern Related to Site:

The Fulbright Landfill is located on the flood plain of a tributary to the Little Sac River. The Little Sac River is a tributary of Stockton Lake, a major recreational and fishing resource. The site is located near, but downgradient from, Fulbright Spring, a large spring that is a source of drinking water to the city of Springfield. Residences within 1,000 feet of the site use groundwater as a source of drinking water. A Springfield city police shooting range is located near the landfill.

Remedial Actions at Site:

On March 13, 1986, the EPA issued a Consent Order under Section 106 of the

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) to the city of Springfield and other Potentially Responsible Parties (PRPs). The Consent Order required the PRPs to conduct a Remedial Investigation/Feasibility Study (RI/FS) for both the Fulbright Landfill and the adjacent Sac River Landfill under the oversight of the EPA. Both were municipally-operated solid and industrial waste landfills.

The Geophysical Investigation Report was released in June 1986, and used for final revisions in the design of the groundwater monitoring network of the RI. The PRPs began installation of the monitoring wells in July 1986. The PRPs completed sample collection and analysis in May 1987. Two rounds of environmental samples were collected. A series of 22 monitoring wells were installed in both the alluvium and shallow bedrock during the RI.

In April 1988, the EPA completed its review and released the Remedial Investigation/Endangerment Assessment report for public comment. The FS for the site was completed and approved by the EPA and the Missouri Department of Natural Resources (the department).

Based on findings of groundwater monitoring and other investigations in the RI, the EPA signed a Record of Decision (ROD) selecting remedial actions for the Fulbright and the Sac River Landfills in September 1988. Remedial actions for the site consist of the following:

1. Drummed wastes in a sinkhole above the Fulbright Landfill were excavated, tested, treated or disposed of as appropriate. The area was then capped and vegetated.

2. Deed restrictions were placed on the property, controlling future uses.

3. Ground- and surface water samples from the site are being collected and analyzed on a regular basis as part of a long-term monitoring plan.

4. A contingency plan was developed for leachate control if leachate is noted to be a significant or continuing problem.

The EPA and the PRPs negotiated a Consent Decree, effective in February 1990, for the performance of the above remedial actions. The drum removal at the Fulbright sinkhole was completed in fall 1990. Sampling of soils in the sinkhole indicated no significant residual contamination. The sinkhole was backfilled and reseeded.

In early 1993, an RI was conducted at the adjacent North U Drive Site. During the North U Drive RI, the groundwater levels in the deep aquifer were noted to fluctuate dramatically over short periods of time corresponding to variations in pumping rates at the nearby Fulbright pumping station. This localized, but dramatic, effect on the deep aquifer caused the department to suspect that groundwater beneath the Fulbright Landfill may also be affected by pumping at the Fulbright pump station, which pumps as much as 3,000,000 gallons per day. Of particular concern was the potential that groundwater no longer flowed away (northwest) from the Fulbright pump station but flowed toward the Fulbright pump station.

At the department's Hazardous Waste Program's request, the Division of Geology and Land Survey (DGLS) investigated groundwater beneath the Fulbright Landfill to evaluate this potential problem. The EPA funded the study. The DGLS completed a final hydrogeologic investigation report of the Fulbright area in fiscal year 1995. The report concluded that the possibility exists for contamination from the shallow aquifer to reach the deeper aquifer and Fulbright Well No. 1, a part of the city of Springfield's public water supply. The DGLS report recommended installation of a shallow monitoring well and the use of a deep well, Fulbright Well No. 2, as an early warning system to indicate contaminant migration toward Fulbright Well No. 1.

From 1998 to 2000, the city conducted water level and chemical monitoring at the new well. Results indicated that the shallow aquifer was not contaminated. Water level measurements conducted during startup pumping of the city's production well were inconclusive with respect to the connection of the shallow aquifer to the deep, Ozark aquifer. The city conducted a

second pump test on Fulbright Well No. 1, similar to the pump test conducted the previous year, and the water level in the upper aquifer went up. This is a very unusual hydrogeologic phenomenon, but one that has been documented in other locations and at this site during 1997.

Unlike the 1997 pump test, during the 1998 pump test, water levels in the upper aquifer decreased through time while pumping the lower aquifer. The department was concerned that this may indicate a connection between the two aquifers.

In 2002, the pump test was repeated prior to shutdown of Fulbright Well No. 1 in order to conclusively ascertain a hydraulic connection between the upper contaminated aquifer and the lower aquifer as influenced by Fulbright Well No. 1. The results of this test indicate that a hydraulic connection, to the extent that contaminated groundwater could migrate into the deeper aquifer and contaminate Fulbright Well No. 1, does not exist. The completion of this test satisfies the outstanding concerns from the department.

Shallow groundwater data indicates that most volatile organic compound concentrations are decreasing. However, in one well, TCE concentrations increased to 1,100 parts per billion (ppb) in 1995 but have shown a downward trend since that time. Sampling conducted in October 2004, detected concentrations at 650 ppb TCE and 140 ppb vinyl chloride.

The city of Springfield has completed a stream bank stabilization project for the South Dry Sac River along the Fulbright Landfill to prevent the stream from eroding into the landfill and to address a leachate seep along the bank.

The city of Springfield voluntarily remediated the leachate seep and exposed trash to ensure that the public water supply is not impacted. The city excavated the exposed trash along the bank and stabilized the area. Large volumes of leachate were not encountered during this action. A monitoring well was installed that will detect the potential for contamination of the deeper aquifer from shallow, contaminated zones.

The site was entered into the EPA's 2005 Ready for Reuse Initiative. The two landfills are located on adjacent properties and are bisected by the Little Sac River. The City of Springfield owns both landfills. The city has worked on stream bank stabilization and has planted many trees and shrubs to help further stabilize the banks. The two landfill sites are going to be used as recreational areas and will complete a "greenway" corridor between two existing city parks. The city has constructed foot trails on the top of the cap of the landfills. Other recreational activities are likely to be added in the near future.

General Geologic and Hydrologic Setting:

The site is located on the flood plain of the South Dry Sac Creek. The creek is gaining or begins to gain near the landfill. Soils consist of permeable alluvium. Bedrock is composed of Burlington Limestone.

If hazardous materials were deposited in this area, it is likely the leachate developed from these materials is migrating with the shallow groundwater into the river. Because of the relatively rapid interchange between water within the alluvial gravels and surface flow in the stream channel, the water quality of the stream could be considerably affected. It is not anticipated that a significant amount of leachate has entered the bedrock groundwater system.

Public Drinking Water Advisory:

Fulbright Spring, one source of Springfield's water supply, is about 2,000 feet uphill and upgradient from the site. A deep public drinking water well adjacent to Fulbright Spring is currently pumping up to 3,000,000 gallons per day. Many private wells are within 0.5 miles of the site. Although no releases have been observed, the site is of concern and is a potential threat to nearby water systems due to the hydrogeologic conditions of the Springfield area.

Health Assessment:

The following are the major contaminants of concern detected in the Fulbright Landfill monitoring well system: barium; chromium; cyanide; 1,2-dichloroethylene; trans-1,2-

dichloroethylene; lead; manganese; nickel; trichloroethylene; and vinyl chloride. Please refer to the Health Assessment Chemical Table in Appendix A for a description of the potential adverse health effects associated with these contaminants.

The Missouri Department of Health and Senior Services (DHSS) has collected water samples from private wells around the Fulbright Landfill from 2002-2006. None of the wells showed contamination by volatile organic compounds above the EPA's Safe Drinking Water Standard. These wells will continue to be monitored by DHSS. The city of Springfield, through a contracted environmental firm, is currently sampling the surface water of the rivers that come into immediate contact with the Fulbright Landfill. These samples are collected and reported on an annual basis. Sample results show that ingestion of or dermal contact to surface water is not a threat to public health.

Monitoring efforts conducted by the city of Springfield or the DHSS should continue to determine the potential for human exposure to the wastes from the landfill.

For more information regarding health-related issues, please contact the Missouri Department of Health and Senior Services, P.O. Box 570, Jefferson City, MO 65102, (573) 751-6102.