

# **KEOKUK MUNICIPAL LANDFILL #1**

**(Keokuk, Iowa)**

## **GENERAL DESCRIPTION**

Keokuk Municipal Landfill #1 is located in the SW 1/4 and the SE 1/4 of the NE 1/4, and the NW 1/4 and the NE 1/4 of the SW 1/4, all of Section 26, T65N, R5W, Lee County, Iowa. The site is on the 20th Street extension approximately 1/2 mile west of the city of Keokuk. The site covers approximately 40 acres of land. The landfill is owned by the city of Keokuk, and was entered on the Registry in November 1990.

## **SITE CLASSIFICATION**

The site is classified "b" in accordance with 455B.427.3. Hazardous substances have been disposed of at the site, posing a significant threat to the environment.

## **TYPE AND QUANTITY OF HAZARDOUS WASTE**

- **The Primary types of hazardous: heavy metals, halogenated and non-halogenated solvents and wastewater sludges**

The city of Keokuk operated the municipal landfill from 1949 to 1979 as a solid waste disposal area. Records of waste disposal were only kept from 1975 to 1979. Records after 1975 show that thirty-two 50-gallon drums of ink saturated paper, thirty-six 50-gallon drums of chromate destruction sludge, and 3 cubic yards of Lysol cleaning fluids were disposed at the site. Other possible wastes at the site include halogenated and non-halogenated solvents and wastewater sludges. In 1975 the Iowa Department of Environmental Quality (IDEQ) issued a site permit. The landfill was close in October 1978. As part of the IDEQ closure plan, the site was capped with two to four feet of vegetated soil, and three monitoring wells installed in September 1980. In 1983, the Iowa Department of Natural Resources prepared a final disposition. The disposition recommended no further action for five years after the closure date.

Two additional investigations, however, were conducted. Groundwater samples yielded arsenic, tetrachloroethylene, and trichloroethylene concentrations above state action levels. A site survey indicated numerous areas containing buried metal and general fill. In November 1990 the city of Keokuk volunteered to continue investigations. Another investigation was conducted in 1998. Dissolved concentrations of iron, manganese and sodium were detected above secondary MCLs, which were established to protect the aesthetic quality of drinking water. Three VOCs (dichloromethane, tetrachloroethylene and trichloroethylene) were also present slightly above the IDNR action levels.

## **SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS**

South Creek borders the site and discharges into the Mississippi River. The river is <1mile south of the landfill. Keokuk draws its water from the river and the water intake is 1.75 miles east-southeast of the site. The closest residential well is located 2 miles southwest of the site.

## **STATUS OF ASSESSMENT, MONITORING OR REMEDIAL ACTION**

The state is the lead agency at the site. The city of Keokuk has conducted additional investigations in August 1991 and August 1998. These investigations resulted in the installation of additional monitoring wells. During the installation of monitoring wells, a gas pocket was discovered. Additional investigation was performed in July 1999 to evaluate the gas pressure problem. Four vent wells were installed in the area of the gas pocket in July 1999.

**2000:** The IDNR received and approved a Remedial Action Plan (RAP) to re-grade and recap a portion of the landfill to comply with standards for a non-municipal solid waste landfill. As part of that plan a two-year surface water and ground water monitoring plan was implemented. The first monitoring report for that plan was received in December 2001.

**2002:** A site inspection was conducted on September 5, 2002. During the inspection it was noted that trees were growing on the cap and several washouts were found eroding the cap. Officials for the City of Keokuk informed the Department that a work plan would be submitted within the next few months addressing the proper maintenance of the cap and the placement of monitoring wells on the down gradient side of the landfill to monitor the condition of the groundwater. The site has had a history of leachate seeps; however, during the inspection no evidence of any seeps was found. Semi-Annual Water Quality Report approved.

**2003:** Hydrological (site) Monitoring System Plan and Site Maintenance Plan approved. Storm Water Control Plan approved. The City of Keokuk requested a variance for the site to allow trees to remain on the landfill cap. The variance was not approved and the City was ordered to remove the trees from the cap.

**2006:** All required site modifications, updates and reports have been completed and or submitted for the site. The only concern to date is a small seep located near the south central portion of the cap. A work plan has been submitted to extend the cap sump system to contain the seep area and send the water to the sanitary treatment facility.

**2007:** The City of Keokuk continues to maintain the landfill cap complying with IDNR landfill rules. No significant deficiencies were noted in 2007.

**2008:** The City of Keokuk continues to maintain the landfill cap complying with IDNR landfill rules. No significant deficiencies were noted in 2008. The City of Keokuk continues to address any minor problems in a timely manor. The site is near the 30 year closer monitoring requirements found in the landfill rules, 2009 will be year 29. IDNR sees no reason to continue monitoring the site after year 30.

**2009:** After the 30 year anniversary of closing Keokuk Landfill #1 the City of Keokuk requested termination post-closure activities. IDNR reviewed the file according to landfill rules and determined the site met the requirements for final closure. Keokuk Landfill #1 is now closed with no monitoring or DNR oversight requirements, however, Keokuk City officials were encouraged to continue landfill cap maintenance and seepage control on their own accord.

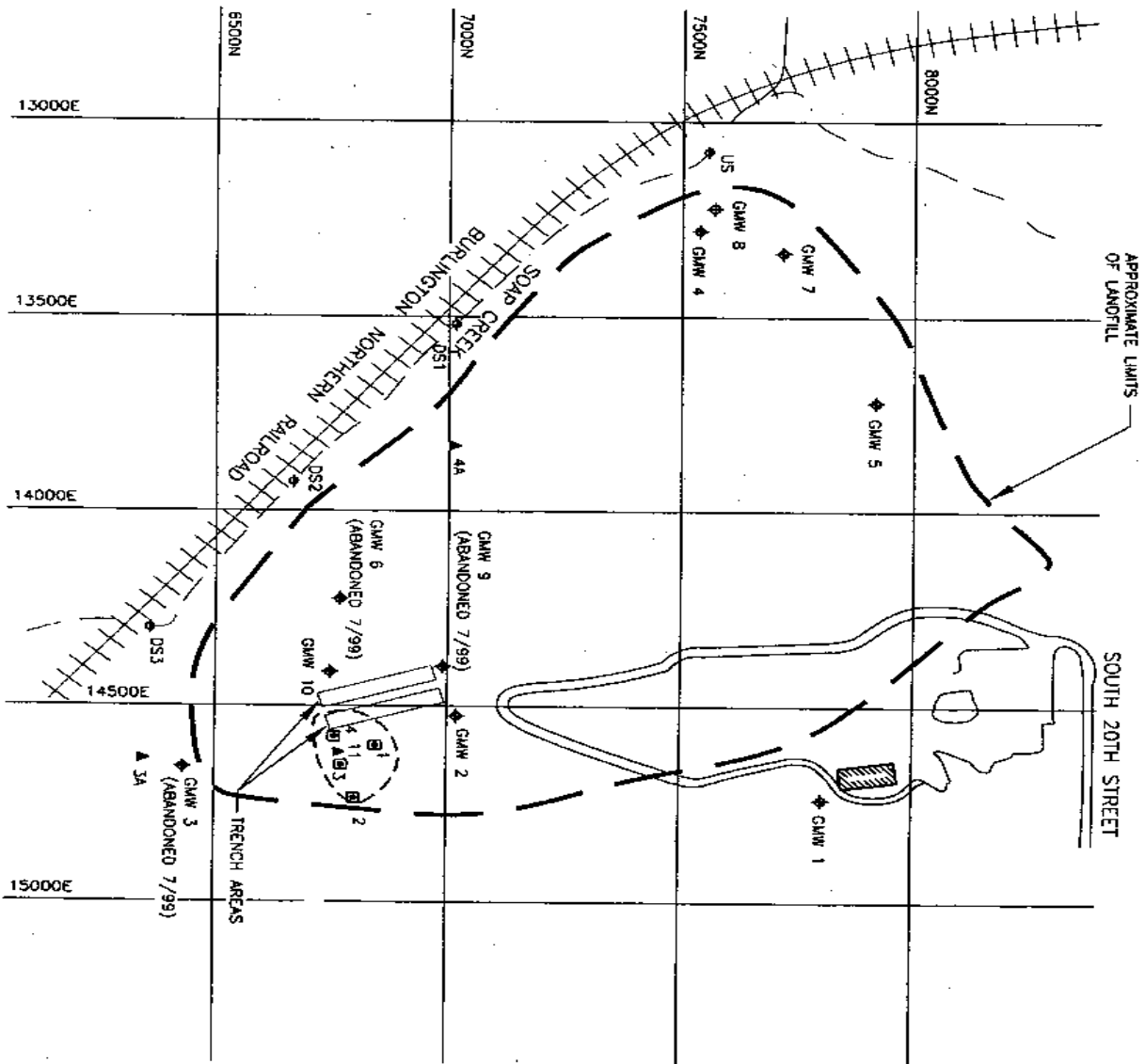


FIGURE 1



**LEGEND**

- ◆ SHALLOW GROUND WATER MONITORING WELL LOCATION
- ◆ DEEP GROUND WATER MONITORING WELL LOCATION
- ▲ GAS VENT WELL LOCATION
- ABANDONED BORING LOCATION
- - - APPROXIMATE EXTENT OF GAS POCKET
- 7000N COORDINATE GRID LINE
- ◆ SURFACE WATER SAMPLE UPSTREAM
- ◆ SURFACE WATER SAMPLE DOWNSTREAM

CITY OF KEOKUK, IOWA  
CLOSED MUNICIPAL  
LANDFILL NO. 1

**MONITORING SITE PLAN**

NOT TO SCALE

12/19/01  
27807.100.01

