

# Kansas Department of Health and Environment

## Bureau of Environmental Remediation, Remedial Section

### Voluntary Cleanup and Property Redevelopment Program



## Joint Effort Facilitates Cleanup of Former Gun Range

### Background:

A cooperative partnership between two State agencies has resulted in cleanup of a lead contamination site associated with a former shooting range located south of the Pottawatomie County State Lake #2 dam. The Kansas Department of Wildlife and Parks brought the project to the attention of the Kansas Department of Health and Environment (KDHE) in 1998, after receiving concerns from local residents. The residents' concerns related to potential lead contamination associated with the abandoned shooting range.

KDHE's Site Assessment Program initiated an assessment to investigate the site in August 1998. The assessment involved a geophysical survey to locate any buried objects and structures, soil screening for metals using portable X-ray florescent technology, and laboratory analysis of soil, surface water, and sediment samples to confirm the extent of lead contamination in the shooting range area and a proximal stream traversing the site.

The geophysical investigation found only two buried structures (iron target stand bases). Surface water and sediment sampling indicated that contamination had not impacted the nearby stream or its sediments. The field screening and laboratory analysis of soil samples identified an area of soil contaminated with lead within the shooting range berms, specifically concentrated in the target area and the berm behind the targets. Laboratory analytical results for soil samples in the impact area ranged up to 49,000 mg/kg (parts per million).

The Kansas Department of Wildlife and Parks applied to KDHE's Voluntary Cleanup and Property Redevelopment Program to address the lead contaminated soil. KDHE's State Water Plan Contamination Remediation and Voluntary Cleanup Programs coordinated to conduct the initial phase of a Voluntary Cleanup Investigation (VCI) on behalf of, and to assist, the Department of Wildlife and Parks. The initial



*View of berm/backstop for shooting range and area of soil removal. Material removed included soil contaminated with lead, spent bullets, and bullet fragments.*

phase of investigation involved additional soil sampling (119 samples) to specifically define the area and depth of the soil to be removed and included groundwater sampling which indicated no groundwater contamination and that the lead contamination was confined to soil in the berm.

### Excavation Activities:

The excavation of impacted soil constituted the second and final phase of the VCI. The excavation work was overseen by KDHE and conducted by a KDHE contractor on behalf of the Department of Wildlife and Parks. Two areas totaling 4,000 cubic feet and 160 tons of lead-contaminated soil were excavated and removed from the site. Verification sampling was conducted by KDHE to confirm that all impacted soil was removed.

### Redevelopment:

The property is to be graded and seeded by the Department of Wildlife and Parks and redeveloped as a Special Use Area for use by local special interest groups such as the Boy Scouts of America and the Girl Scouts USA. Establishing the Special Use Area will create additional park area that will provide overall enhancement of the Pottawatomie County State Lake #2.

### Benefits:

- **160 tons of contaminated soil removed.**
- **Site cleanup completed addressing residents' concerns.**
- **0.2 acre property is being redeveloped to enhance outdoor recreation in Kansas.**



*Picturesque Pottawatomie County State Lake #2. The lake is reportedly one of the finest fishing lakes in Kansas*