

lake. Wastewater generating sources at the railyard have included hopper car washing operations, boiler blow downs, sanitary sewers, and the oil/water separators at the diesel fueling racks. Although the railyard was constructed in the early 1900's, the majority of the discharge to the lake occurred between 1962 and 1982. Investigations of the lake water and underlying sediments were performed from 1979 to 1982 by EPA and AT&SF. In November 1981, the site was proposed for the National Priorities List (NPL). In September 1983, the site was listed on the NPL as "ATSF (Clovis)" with a Hazard Ranking System score of 33.62.

Remedial Investigation and Feasibility Study (RI/FS)

A Remedial Investigation (RI) of the site was conducted in 1987 and 1988 and included analyses of soil, sediment,

lake water and ground water samples. Four wells were installed surrounding the lake for monitoring the ground water in the immediate vicinity of the lake. Additional samples were collected from water supply wells in the area for statistical comparison to the sample collected from the on-site wells.

Soil, sediment, lake water, and ground water samples were analyzed for the parameters listed in the Administrative Order on Consent (Consent Order) issued in 1983. The RI report was finalized in August 1988. The RI listed the parameters of potential concern (those compounds present above background values), as follows:

Soils: Barium; Boron; Chloride; Hydrocarbons; Phenolics; Sulfate;

Sediments: Boron; Chromium; Hydrocarbons; Lead; Phenolics; Total Organic Carbon;

Lake Water: Arsenic; Boron; Cadmium; Chromium; Fluoride; Lead; Phenolics; Total Dissolved Solids; Total Organic Carbon

Ground Water: Calcium; Chloride; Fluoride; Magnesium; Sodium; Sulfate; Total Dissolved Solids; Total Organic Carbon; Total Alkalinity; Bicarbonate; Conductivity.

Background values were determined through collection and analysis of ground water samples from area wells, lake water samples from area playa lakes and soil samples from unaffected areas at the site. A comparison of analytical results from the various samples collected at the site to the background analytical results was presented in the RI.

The range of concentrations of chromium and hydrocarbons in samples collected for the RI were as follows:

Media	Total chromium	Leachable chromium	Hydrocarbons
Soils, Sediments, Lake Water	5.1 to 15 mg/kg, 35 to 150 mg/kg, 0.012 to 0.059 mg/L.	<0.009 to 0.042 mg/L, 0.028 to 0.043 mg/L, not analyzed.	<5 to 3,300 mg/kg, 4,700 to 35,000 mg/kg, <0.2 mg/L.

Subsequent sampling of soils and sediments was performed to speciate the chromium and hydrocarbons. The analytical results of the subsequent sampling were used to refine the health risk assessment, which confirmed that the only potential health risk pathway was through inhalation of wind-blown dust. These results were presented in an addendum to the RI report dated September 1988.

Additional ground water sampling occurred following submittal of the RI report, at the request of the New Mexico Environmental Improvement Division (NMEID). The results of the additional sampling indicated that several monitored parameters were statistically higher in the on-site wells when compared to the background wells. However, none of the parameters were found to present a health risk. Therefore, it was determined that ground water remediation was not required. These results were presented in a second addendum to the RI report dated November 1988.

A Feasibility Study (FS) was conducted in conjunction with the RI in July 1988. The remedial alternatives focused on remediation of soils and sediments to remove the potential health risk through inhalation of wind-blown dust. Because any action involving the lake bottom sediments would require prior removal of water from the lake, management and remediation of the lake water was also a component of the remedial

alternatives addressed in the FS. Since the addendums to the RI did not change any conclusions drawn in the RI and did not add any contaminants of concern to the remedial action required, no revision to the FS was required.

Characterization of Risk

An analysis of health and environmental effects was performed as part of the RI. This analysis evaluated each potential parameter of concern for health and environmental effects. It was determined that the following parameters had the potential to pose a health risk:

Soils: Barium; Hydrocarbons; Phenolics;

Sediments: Chromium; Hydrocarbons; Lead; Phenolics

Lake Water: Arsenic; Cadmium; Chromium; Lead; Phenolics;

None of the parameters detected in ground water were determined to pose a risk to human health and thus ground water was eliminated as a possible human exposure pathway. An evaluation of the risk to human health through the remaining exposure pathways was conducted for those parameters that had a potential to pose a health risk. The evaluation indicated that the only constituents found in the lake water, lake bottom sediments, and surrounding soils that had a potential health risk were chromium and hydrocarbons through inhalation of wind-blown dust.

Record of Decision Findings

On September 23, 1988, the Regional Administrator approved a Record of Decision (ROD), which summarized the findings of the RI and FS and stated what the selected remedial action included. The ROD identified the major concern for this site was the potential threat to the ground water. The ROD further stated that the results of the RI data were reviewed and EPA determined that the lake did not pose a current threat to the City water supply, but may pose a future threat if the source of contamination is not eliminated. An additional concern was stated about reduction in the water level in the lake, resulting in an increased risk from inhalation of dust produced from exposed sediments. Therefore, the following elements were selected for remedial action:

- Lake Water—Pumping, Evaporation and Disposal of Residue;
- Sediments—Dredge, On-site Biodegradation, Cap Land Treatment Area and Revegetation of Dredged Areas; and,
- Soil—In-situ Biodegradation and Revegetation.

The selected remedy resulted in the removal of the lake water (through evaporation), the removal or reduction of hydrocarbons (through biodegradation and landfarming), and isolation of metals (through placement in a capped treatment area). Thus, the selected remedy addressed both objectives (removal of future threat to