STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION VIII
ID# 2470

Union Pacific Railroad-Laramie Tie Plant Site

Laramie, Wyoming
September 28, 1994

Facility/Unit Type:	**Wood preserving and treatment**
Contaminants:	**Creosote, pentachlorophenol**
Media:	**Ground water, soil**
Remedy:	**Continued operation of in-place ground water containment systems; installation of three wells for hydraulic gradient control; removal of DNAPLs using the waterflood oil recovery method; covering contaminated soil with topsoil; capping; and institutional controls**

FACILITY DESCRIPTION

In August, 1991, EPA and Union Pacific Railroad (UPRR) entered into an Administrative Order on Consent (AOC) requiring UPRR to perform a Corrective Measures Study to identify plausible remedies at the Laramie Tie Plant site.

The 110-acre UPRR-Laramie Tie Plant site is an inactive wood preserving and treatment facility located on the Laramie River in Laramie, Wyoming. Land use in the area is primarily agricultural. UPRR intermittently operated the site from 1886 to 1983 for the treatment of railroad ties and other wood preserving operations. The 25,000 residents of the city of Laramie draw drinking water from a combination of the Casper Bedrock unit (five miles upslope and east of the town) and diverted surface water at a point 25 miles upstream from the UPRR facility on the Laramie River.

Contamination has been found in surface soils covering approximately 90 acres of the site. The presence of dense nonaqueous phase liquids (DNAPLs) within the alluvium and at the bottom of the underlying Morrison aquifer has also been established. Creosote and pentachlorophenol (PCP) were the principal wood-preserving agents used at the facility and are the primary sources of ground-water and soil contamination. Treated railroad ties were allowed to drip dry on the ground, accounting for much of the surface or near-surface soil contamination. Wastewater generated in the wood treating process was discharged to low lying areas via a shallow ditch system, and was also stored in an unlined wastewater impoundment.

In 1981, ground-water contamination revealed in monitoring wells installed pursuant to RCRA requirements around a surface impoundment led UPRR to further evaluate contamination at the site. In 1983, EPA placed the site on the NPL and UPRR decommissioned the facility, demolished onsite buildings, and shipped unused wood treatment materials to another facility. In 1984, the waste management impoundments were closed. A remedial investigation (RI) conducted under CERCLA found contamination in surface soils over approximately 90 acres of the site as well as the presence of DNAPLs.

Studies indicate that there is virtually no possibility of contaminants reaching the Casper formation and contaminating the city's water supply. In addition, areas monitored in the Laramie River downstream from the site have shown no site contaminants in greater concentrations than they appear upstream; an indication that contaminants from the site are not being released to surface water.

As part of a Contaminant Isolation System (CIS) installed in 1987 to prevent the migration of contaminants to the Laramie River, UPRR realigned the Laramie River channel approximately 150 feet to the west, installed an underground barrier wall around the site, installed a water treatment system to

CONTAMINATION DETECTED AND CLEANUP GOALS*

Media	Estimated Volume	Contaminant	Maximum Concentration (units)	Action Level (units)	Cleanup Goals (units)	Point of Compliance
ground water		creosote pentachlorophenol				
soil		creosote pentachlorophenol				

* Not applicable due to technical impracticability.

remove and treat contaminated water before returning it to the Laramie River, and implemented a complex ground-water monitoring program to measure the system's effectiveness. In 1988, the Morrison Contaminant Withdrawal System (MCWS), comprised of three ground-water extraction wells, was installed. The system is designed to draw contaminated ground water from a small area 60 feet below the surface outside the western site boundary.

EXPOSURE PATHWAYS

No exposed receptors.

SELECTED REMEDY

The selected remedy for this site includes continuing operation of the CIS and MCWS containment systems to prevent migration of residual DNAPL from the site; installing three new wells to control the hydraulic gradient in the nearby Sundance aquifer and ensure that contamination does not migrate further due to offsite pumping of ground water; removing mobile DNAPL contaminants using the waterflood recovery method; covering 90 acres of contaminated surface soil with topsoil; installing a six-acre soil cap over the former impoundment area; and maintaining indefinitely strict access to the site through institutional controls. The estimated total cost of the selected remedy is $65,000,000.

INNOVATIVE TECHNOLOGIES CONSIDERED

The waterflood oil recovery process employed to remove mobile DNAPLs from alluvial sands and gravels is an innovative technology that involves pumping water into the contaminated area. This causes the mobile DNAPL to mound and enter recovery drainlines installed in the alluvium, after which the DNAPL is withdrawn and eventually reused. The process is expected to remove 90% of the mobile DNAPL over a period of five to seven years.

PUBLIC PARTICIPATION

Approximately 25 people attended the public meeting on May 11, 1994. At the meeting, several questions and concerns were expressed regarding the following: the effectiveness of the proposed remedy, the types of technologies evaluated, the long term capacity of the Wyoming Department of Environmental Quality (WDEQ) to oversee the site, changes in the remedy since 1986, future land use, recreational use of the Laramie River, and the safety of Laramie's water supply. No comments were made that would affect the selected remedy for the site.

NEXT STEPS

Existing technology is limited in its ability to completely remove DNAPLs in bedrock forma-

tions and restore DNAPL-contaminated ground water to drinking water quality. However, through the removal of mobile contamination, ground-water gradient control, and institutional controls, the remedy is protective of human health and the environment. Because the target cleanup goal requiring a 10^{-6} potential carcinogenic risk level throughout the contaminated ground water will not be attained, EPA will require UPRR to obtain a RCRA Post-Closure Permit for the site once the remedy has been implemented. Furthermore, five-year reviews of the technical impracticability (TI) determination will be made and additional remedial measures may be implemented if future advances in technology make attainment of ground-water cleanup standards technically practicable.

KEYWORDS

Ground water, soil; organics (phenols); capping, containment (physical, hydraulic), innovative technology (selected), institutional controls, soil cover

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