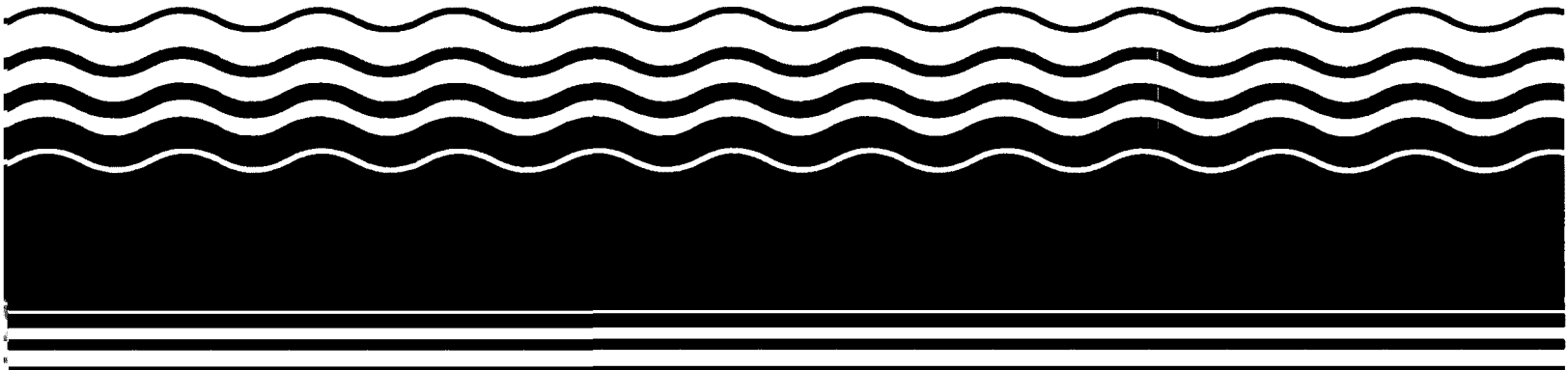


PB95-963124
EPA/AMD/R05-94/261
March 1995

**EPA Superfund
Record of Decision Amendment:**

**Arrowhead Refinery Co.,
Hermantown, MN
2/9/1994**



Amendment To The Record of Decision Declaration

Site Name and Location

Arrowhead Refinery Superfund Site
St. Louis County
Hermantown, Minnesota

Statement of Basis and Purpose

This decision document amends the selected remedial action for the Arrowhead Refinery Superfund Site (Arrowhead) developed in accordance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA) and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This amendment to the Record of Decision (AROD) makes fundamental changes to the remedy selected in the 1986 Record of Decision (ROD).

This AROD does not make "fundamental changes" (within the meaning of the Environmental Protection Agency's Office of Solid Waste and Emergency Response Directive 9355.3-02FS-4, "Guide to Addressing Pre-ROD and Post ROD Changes", April 1991) to the groundwater remedy selected in the ROD. Therefore, this AROD does not constitute an amendment of that groundwater remedy. However, this AROD does document minor differences in the groundwater remedy which the Agency intends to implement.

This AROD is based on the administrative record file for the Arrowhead Site.

The State of Minnesota, through the Minnesota Pollution Control Agency (MPCA), has verbally concurred with the amended remedy.

Assessment of the Site

Actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response action selected in this AROD, may present an imminent and substantial endangerment to the public health, welfare and/or the environment.

Description of the 1986 ROD Remedy

The site contaminated media were originally divided into three parts: 1) groundwater, 2) sludge, filter cake and oil saturated peat (source material) and 3) contaminated soils and sediments.

The 1986 ROD specified that the following remedial actions be implemented:

- Extend the nearby municipal water system to replace private

water supplies to ten residences most likely to be affected by groundwater contamination from Arrowhead. Abandon individual wells formerly used as drinking water supplies in accordance with state well codes.

- Design and install a groundwater extraction and treatment system to capture and restore the contaminated groundwater beneath the site and to prevent off-site migration of the contaminated plume. Discharge extracted contaminated groundwater to the Western Lake Superior Sanitary District waste water treatment facility (WLSSD). Potential ingestion of on-site groundwater has an excess lifetime cancer risk of 10^{-3} for either a residential or a commercial/industrial setting. Operate the extraction and treatment system until 10^{-6} lifetime cancer risk levels are achieved (estimated at 25-50 years).

- Excavate and incinerate on-site, 4,600 yds³ of source material and 20,500 yds³ of contaminated soils and sediments with concentrations of carcinogenic Polynuclear Aromatic Hydrocarbons (PAHs) and Volatile Organic Compounds (VOCs) that exceed the 10^{-6} excess lifetime cancer risk in a commercial/industrial setting and/or concentrations of lead and other non-carcinogens that exceed adult chronic acceptable intake levels (AIC). Determine the leaching characteristics of the resulting ash. If the ash is non-hazardous by the EP toxicity test, place it back on-site. If hazardous, stabilize and place in a subtitle D landfill.

- Conduct further field studies to enhance site characterization. In response to a request from the Minnesota Pollution Control Agency (MPCA), the ROD stated that the technologies eliminated early in the FS - vitrification, chemical fixation, and cementation - would be reevaluated and that bench-scale studies would be considered.

The total cost of this remedy was estimated at \$23,000,000 in 1986.

The groundwater remedial design and construction have been completed. Minor changes in the operation and maintenance of the extraction and treatment system, which do not constitute fundamental or significant changes, including point of compliance and cleanup levels, are discussed.

Explanation of Fundamental Remedy Change

EPA conducted a solvent extraction study which indicated that this technology would not be a suitable technology for the Arrowhead Site. MPCA and the Minnesota Arrowhead Site Committee (MASC), a group of PRPs, each conducted treatability studies in an effort to find a less costly alternative to incineration for both source

material, soils and sediments. Technologies evaluated included solid phase and slurry phase bioremediation, stabilization/solidification, soil washing with lead removal, thermal destruction in a cement kiln or other boilers and industrial furnaces, and chemical dissociation with lead recovery. With respect to the source material, the results of these studies indicated that chemical disassociation of source material would be the optimal method of remediation. This technology removes lead from the source material and provides a saleable "off-spec" fuel. Additionally, the lead may be recovered in a smelting operation.

Another very important discovery resulting from these studies was that as soil samples were obtained and analyzed, PAH and VOC levels were consistently found to be below health based levels of concern. This was verified in a separate field sampling study conducted in June 1993. Upon review of the early field studies, it was found that there were only two PAH "hot spots" in the soil and that these were likely due to cross contamination with filter cake. As a consequence of these findings, the soil and sediment contaminant of concern is now only lead. Therefore, treatment technologies which targeted organic compounds in soils and sediments, including incineration, have been discounted from further consideration.

Description of Amended Remedy

The major elements of the selected amended remedy include:

- Excavation of sludge and filter cake using a visually contaminated standard; total volume approximately 4,600 - 6,100 cubic yards.
- On-site treatment of sludge and filter cake by chemical disassociation (re-refining) of the toxic compounds within the sludge/filter cake matrix to produce a saleable "off-specification" fuel and to recover lead in a smelting operation or to stabilize and place in a permitted RCRA Subtitle D facility.
- Excavation of visually contaminated soils and sediments, followed by placement of soils and sediments in a permitted RCRA Subtitle D facility.

Discussion of Change in Groundwater Remedy

- Operation and maintenance of the groundwater extraction and treatment system until groundwater at the site perimeter meets Maximum Contamination Limits (MCLs).

Statutory Determinations

The selected remedy is protective of human health and the environment, attains Federal and State requirements that are

applicable or relevant and appropriate for this remedial action and is cost effective. This remedy satisfies the statutory preference for remedies that employ treatment that reduces mobility, toxicity or volume (MTV) as a principle element and utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent possible.

Because this remedy will not result in hazardous substances remaining on-site above health-based levels, the five-year review will not apply to this action.

☒ Approved ☐ Disapproved

Regional Administrator

David A. Allred

Date

2/9/94