

Nemo Work Center Remedial Investigation and Feasibility Study Black Hills National Forest, SD



This fact sheet presents a summary site background and status of the in-progress Remedial Investigation and Feasibility Study Reports.

History of Project

During the 1960s and 1970s, the United States Department of Agriculture (USDA) US Forest Service (USFS) used the Nemo Work Center and surrounding National Forest land to mix a liquid Ethylene Dibromide (EDB), with diesel fuel. This mixture was sprayed on pine trees to control mountain pine beetles in the surrounding forests. A ready-mixed EDB/diesel insecticide spray labeled "Beetle Belter" was also used during this time period. In 1984, the US EPA banned the use of EDB as a fumigant pesticide.

In the early 1990s, former USFS employees recalled the burial of EDB containers at the Nemo Work Center. Subsequent sampling revealed that EDB had infiltrated Nemo area groundwater and several private drinking water wells had been impacted by EDB. In response to the discovery of EDB in private wells, and to mitigate exposure to EDB, the USFS began providing clean drinking water to residences with impacted wells. Since that time, the USFS has initiated site studies in an attempt to identify the EDB source area and the extent of the EDB plume in groundwater. To date no buried EDB containers have been found within the Nemo Work Center study area. To test the effectiveness of using pumps to control the spread of EDB impacted groundwater, the USFS has installed a groundwater extraction and treatment system.

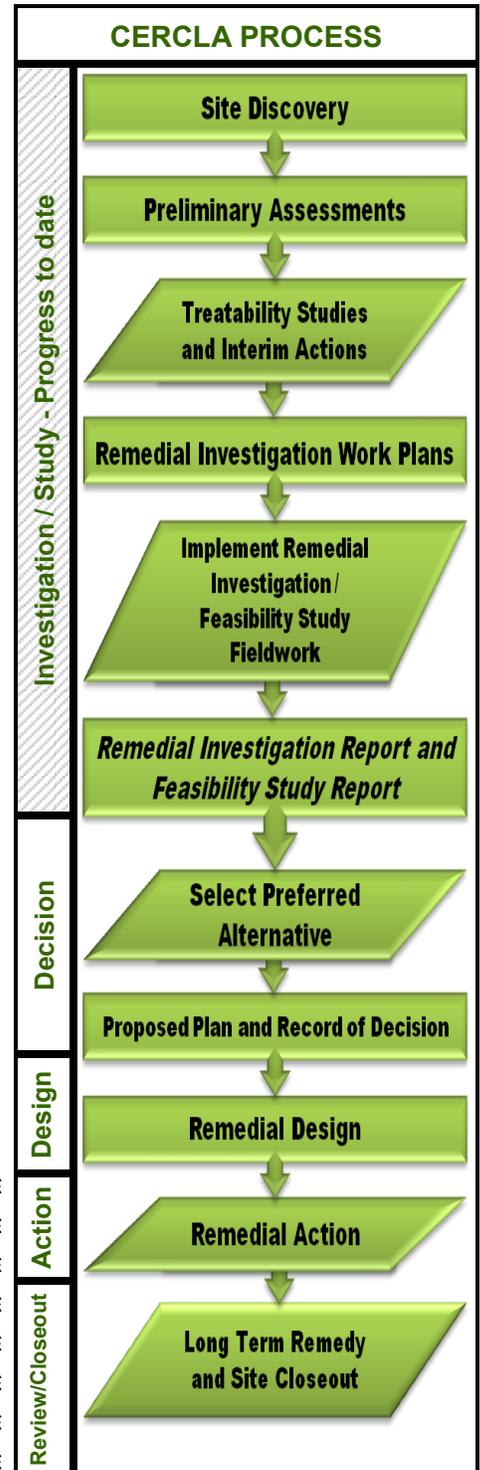
Periodic groundwater sampling began in 1984 and continued through 2008 when a formal Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Remedial Investigation (RI) was initiated. As part of the RI, groundwater sampling continued in 2009 and was completed during March 2010. Based on the RI data, it appears there may be two sources for the EDB found in the Nemo area:

- Mixing and disposal site located near the bedrock ridge west of the Nemo Work Center; and;
- An adjacent property where 2 of 3 underground storage tanks (USTs) were found to be leaking at the time of removal. EDB was used as a gasoline additive from the 1920s through the 1980's

The CERCLA process is shown to the right.

Risk Assessments

The RI includes both a Human Health Risk Assessment (HHRA) and a Screening Ecological Risk Assessment (SERA) that were conducted in accordance with US Environmental Protection Agency guidance. The risk assessments use data collected during the current RI to assist risk managers with the decision-making process. The HHRA has determined the primary human health risk is associated with potential residential exposures to EDB -



What is a Remedial Investigation / Feasibility Study?

The Remedial Investigation documents the types, amounts and locations of contamination at a site. The Feasibility Study identifies, screens and compares alternatives that can be used for site cleanup.

concentrations in groundwater underlying private property adjacent to the USFS property. The SERA determined there are no adverse effects from the primary ecological risk associated with seepage of EDB-contaminated groundwater to Boxelder Creek.

Extent of Contamination

Based on the most recent measurements taken in March 2010:

- A primary plume extends in length approximately 4,780 ft. from the Troxell well in the north to the Kaberna well in the southeast;
- The width of the primary plume extends approximately 1,780 ft. west from the Post Office well; and
- A secondary plume appears to be centered on the Nemo Guest Ranch.

Groundwater Model

The RI includes a computer-generated groundwater and contaminant flow model that identifies subsurface locations where EDB in groundwater can travel freely and where groundwater travels slowly. This model helps to predict the EDB plume behavior and supports the conclusion that subsurface fractured bedrock conditions produced groundwater that flows two directions from the most likely EDB release locations. A minor groundwater flow travels to the north and a primary component to the south as depicted in the Conceptual Site Model (below).

Feasibility Study

A draft Feasibility Study (FS) is being prepared in tandem with the draft RI. The FS will evaluate cleanup alternatives for three operable units (OUs) that include OU1, Source Identification and Control, OU2, Drinking Water System, and OU3, Groundwater. Potential alternatives for OU1 include treatment of residual EDB in soil. OU2 alternatives, including altering or expanding the existing drinking water supply system, will be evaluated. Finally, for OU3, alternatives for treatment of EDB in groundwater and options for retaining the EDB contaminated groundwater on USFS property will be evaluated. CERCLA evaluation criteria, public input, and costs of various alternatives will help to identify preferred alternatives.

Evaluation Criteria

CERCLA evaluation criteria used to select cleanup alternatives include the following:

- Overall protection of human health and the environment
- Compliance with regulations
- Long- and short-term effectiveness
- Reduction of contamination through treatment
- Implementability
- Cost, and
- Public acceptance

Next Steps

After preferred alternatives are selected, Proposed Plan (PP) and Record of Decision (ROD) documents will be prepared for each OU. The public will have the opportunity to review and comment on USFS decisions described in the PP. Response to public comments will be completed by the USFS prior to publication of the ROD. Then the chosen cleanup alternative documented in the ROD will be implemented by the USFS.

Schedule

Fall 2010 - Final RI

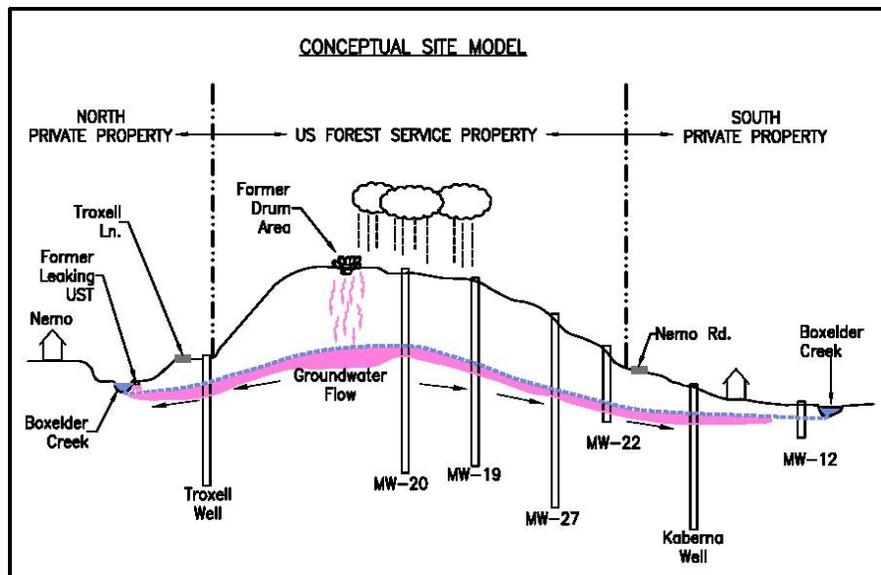
Winter 2010 - Final FS

Spring 2011- Operable Unit 3 Proposed Plan

Fall 2011 - Operable Unit 3 Record of Decision

2010-2011 - Operable Unit 1 Proposed Plan and Record of Decision

2011-2012 - Operable Unit 2 Proposed Plan and Record of Decision



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