

Bog Creek Farm

New Jersey

EPA ID#: NJD063157150

EPA REGION 2 Congressional District(s): 04

Monmouth
Howell Township

NPL LISTING HISTORY
Proposed Date: 12/30/1982
Final Date: 9/8/1983

Site Description

A 4-acre disposal area was located on the 12-acre Bog Creek Farm, which contained a pond, bog, and trench. Between 1973 and 1974, organic solvents and paint residues were dumped around a trench in the eastern part of the property. Waste sampling revealed a wide variety of volatile organic compounds (VOCs) and heavy metals. Some chemicals moved into the ground water, which carried them to the pond and bog, as well as to the north branch of Squankum Brook. Contaminant levels in the north branch of Squankum Brook decreased markedly with distance from the site and did not appear to effect the Manasquan River. The site lies in a rural agricultural and recreational area. Farms which raise horses, nursery stock, vegetables, grain, sod, and flowers are situated nearby. The Allaire State Park is 1/2 mile east of the site and is used by golfers, fishermen, hunters, and equestrians. There are two homes on the site and several more about 500 feet to the northwest, on Squankum Park Road. Approximately 900 people live within 1 mile of the site. The town of Farmingdale, 3 miles north of the site, has approximately 1,400 residents. Ground water is the sole drinking water source for residents near the site and is also used for irrigation. Nearby surface waters are used for recreation.

Site Responsibility: This site is being addressed through Federal actions.

Threat and Contaminants

On-site ground water and surface water contained various VOCs. Sediments were contaminated with VOCs, phthalates, and pesticides. The soil was contaminated with VOCs, pesticides, and heavy metals. Sludges on site contained VOCs and heavy metals. People were at risk from direct contact with contaminated surface water, sediments, and soil. The one remaining risk of accidental ingestion of contaminated groundwater is greatly reduced since the contamination is confined to a closed-loop treatment system.

Cleanup Approach

This site has been addressed in three phases: two separate remedial action phases designed to clean up the known sources of contamination, and a long-term remedial response phase designed to clean up the remaining source materials and ultimately restore the ground water quality to the goals set out in the Records of Decision (RODs).

Response Action Status

Initial Actions: In 1984, the site owner pumped wastes from the disposal pits, hauled the wastes to an EPA-approved landfill, and backfilled the pits.

Source Control: Beginning in 1984, EPA installed test pits, trenches, and monitoring wells on site as part of an investigation to determine the nature and extent of contamination. In September 1985, EPA selected a remedy for controlling the source of the contamination by: (1) removing wastewater and sediments from the pond and bog, (2) regrading and covering the pond and bog, (3) treating the wastewater in an on-site plant and discharging clean water to the nearby stream, (4) excavating the contaminated waste deposits and soil, (5) incinerating excavated materials at a temporary facility on site or at an EPA-approved facility off site, (6) conducting further analysis of soil left behind to see if further cleanup is necessary, (7) evaluating innovative technology to treat remaining soil, if necessary, (8) covering the excavated area with a compacted soil cap, (9) building a security fence around the work areas, and (10) starting a monitoring program to assess the effectiveness and reliability of the cleanup strategy. EPA completed the design specifications for this remedy in 1988, and completed the remedial action in 1990.

Ground Water and Sediment Cleanup: In June 1989, EPA selected a remedy which called for: (1) extracting, treating,

and reinjecting ground water via the on-site water treatment plant to restore the Upper Kirkwood Aquifer to identified cleanup goals, and (2) excavating and incinerating contaminated sediments from the north branch of Squankum Brook and disposing of the incineration residues on site. Because of the timing, EPA was able to include the removal and treatment of sediment from the stream bed with the first remedial action, thus completing all incineration activities in 1990. The construction of the ground water extraction and treatment facilities was completed in the fall of 1993, followed by a six-month startup period. The first full year of operation began in August 1995. The design contractor originally estimated the cleanup would take 8 to 10 years, but data presented in the Second Five-Year Review indicated that it would take decades longer than that. However, the closed-loop system insures that no contaminated ground water will reach its normal discharge point of the north branch of Squankum Brook. Though the existing extraction/treatment system has always operated to design specifications, EPA investigated ways to reduce the source (volume) of contamination at the site and then optimize the system to maximize its captured and removal. The source reduction was accomplished under an ESD to the 1985 ROD. The enhanced capture and treatment of the contaminated groundwater was developed in a Focused Feasibility Study which resulted in an Amendment to the 1989 ROD, signed 9/29/05. The design which called for a smaller, automated treatment facility was awarded on January 2, 2006 and completed in July 2008. The new facility was erected in a 12 month period from July 2009 to July 2010. The startup year was completed a year later, on July 20, 2011, which also marked the beginning of the long term remedial action.

Cleanup Progress

The major source control remedial actions called for under the 1985 ROD were undertaken in a 12-month field program which ended in October 1990, and included the operation of an onsite incinerator which treated 15,500 cubic yards of soil and sediments.

The water treatment system operates continuously, treating and reinjecting in excess of a million gallons of clean water per month. The first five-year review of the site, which was completed in September 1997, determined that the combined remedy was functioning properly. A second five-year review was completed in September 2002. An extensive optimization study was initiated in October 2001 and is ongoing. The objective of the study is to reduce the time frame needed to clean up the groundwater. The optimization effort concluded that residual contaminant levels in the soil were too high for the extraction/ treatment system to attain aquifer cleanup within an acceptable time frame. Accordingly an Explanation of Significant Differences (ESD) to the 1985 ROD was issued in January 2005 which stated that a new round of excavation would be undertaken to remove these high concentrations. A total of 18,000 tons of contaminated soil was excavated and shipped off-site in the course of this work, while the related dewatering effort required the removal and treatment of 6.5 million gallons of contaminated groundwater. The excavation phase was completed in November 2006. As part of this work, a new chain-link fence was installed around the working part of the site.

Concurrent with this work under the ESD to OU-1, a focused feasibility study (FFS) was undertaken in order to amend the 1989 or OU-2 ROD. The FFS was the basis for a ROD amendment, which was completed and signed September 29, 2005, calling for an upgraded pump and treat system capable of achieving groundwater cleanup within a reasonable period of time once a second, more precise excavation is completed. A contract was let to prepare the design of a new extraction /treatment system to replace the existing one. However, due to the extensive excavation work performed by the EPA, both the new design contractor, CDM, and EPA's Environmental Response Team spent 18 months, from January 2006 to July 2007 in a pre-design investigation including pilot testing to customize the selected remedy for the altered site conditions. The 30% Design Analysis Report was submitted in December of 2007 and the Final 100% Design in September, 2008. EPA will continue contaminant removal and maintain plume control during the transition from the old facility to the new one. In order to accomplish this EPA brought in a temporary plant which allowed for the dismantling and removal of the old plant and excavation of hot spots beneath that facility. That work was completed on June 26, 2009, and in July 2009 the construction contractor was on site ready to start work on a new treatment facility. The new extraction /treatment system came on-line in July 2010 at which time the contractor switched over to operations and maintenance which normally takes a year to demonstrate the plant's long-term potential. This is a federal, fund-lead site.

Site Repositories

In addition to the Region 2 Record Center, there are two repositories in Howell Township which are only yards apart:

- 1) Township Clerk's Office, 251 Preventorium Road
- 2) Howell Library, 318 Old Tavern Road