Explanation of Significant Differences

BREWSTER WELL FIELD SITE

TOWN OF SOUTHEAST
Putnam County, New York

61661

EPA
Region 2

December 1996

INTRODUCTION

In accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 117(c) and Section 300.435(c)(2)(i) of the National Oil and Hazardous Substances Contingency Plan, if after the adoption of a final remedial action plan, such action differs in any significant respect from the final plan, an explanation of the significant differences and the reasons such changes were made must be published.

The 1986 Record of Decision (ROD) for the Brewster Well Field site calls for, among other things, the design and construction of a groundwater management system (GMS), consisting of extraction wells, an air stripper for treatment of the extracted volatile organic compound (VOC)-contaminated groundwater, and injection wells for reinjection of the treated groundwater at the site.

The construction of the GMS was completed in 1991. During the 90-day remedy shakedown, three of the four extraction wells were found not to be yielding sufficient volumes of water and the eight injection wells were not accepting sufficient volumes of water. In an attempt to rectify the operational problems, two new extraction wells were installed, two extraction wells were abandoned, and corrective actions for the third well were taken. The injection wells and new extraction wells were then redeveloped, and the GMS was restarted. During restart-up, however, the GMS was unable to process water consistent with the designed performance criteria.

In 1993, in an attempt to attain an operational and functional GMS, the United States Army Corps of Engineers (USACE), on EPA's behalf, commenced the redevelopment of the existing injection wells, the testing of the GMS, and the installation, development, and the testing of four new injection wells. During the performance of the injection well redevelopment field work, the USACE found buildup of fine materials and carbonate/metal oxide precipitates on the well casings, possibly due to the high dissolved solids/hardness content of the groundwater and resultant oxygenation of the water through the air stripping process. Subsequently, all of the injection wells were redeveloped and acid-cleaned.

From 1994 to 1995, the USACE performed a pH adjustment field study and a softener/chelating agents/polymers addition bench-scale treatability study. The findings of these studies indicated that, while these water treatment alternatives are viable, they are extremely expensive. Subsequently, an evaluation of the viability of discharging the air-stripped water to the Croton River, in lieu of reinjecting it on-site, was performed by the USACE. Based on the findings of this investigation, surface water discharge was determined to be the optimal alternative to reinjection.

This Explanation of Significant Differences (ESD) will become part of the Administrative Record file for the Brewster Well Field site. The entire Administrative Record for the site, which includes the Remedial Investigation Report, Feasibility Study Report, Proposed Plan, and ROD, and other relevant reports and documents related to the site and to the above-described investigations are available for public review at the following location:

Brewster Village Hall
208 East Main Street
Brewster, NY 10509

Hours: 9:00 am - 4:00 pm
Monday - Friday

The Administrative Record file and other relevant reports and documents are also available for public review at the EPA Region II office at the following location:

U.S. Environmental Protection Agency
290 Broadway, 18th floor
New York, New York 10007

Hours: 9:00 am - 5:00 pm
Monday - Friday

The change to the selected remedy is not considered by EPA and New York State Department of Environmental Conservation (NYSDEC) to have fundamentally altered the remedy selected in the ROD. The remedy remains protective of human health and the environment and complies with federal and state requirements that were identified in the ROD.

SUMMARY OF SITE HISTORY, CONTAMINATION PROBLEMS, AND SELECTED REMEDY

The Brewster Well Field site is located on the northern bank of the East Branch Croton River and east of Interstate 84, approximately three-fourths of a mile east of the Village of Brewster, in the Town of Southeast, Putnam County, New

York.

The Brewster Well Field, which supplies water to approximately 2,200 people in the Village of Brewster, Putnam County, New York, was found to be contaminated with VOCs (primarily perchloroethylene, trichlorethylene, and dichloroethylene) in 1978. Under a cooperative agreement with EPA, the Village installed a full-scale air stripper, which is currently providing safe drinking water to the Village. The site was placed on the National Priorities List of Superfund sites in December 1982.

From 1984 to 1986, through a cooperative agreement between NYSDEC and EPA, the NYSDEC's consultant performed a remedial investigation and feasibility study (RI/FS) at the site. Based on the results of the RI/FS, a ROD was signed in September 1986. The selected remedy included continuing to operate the existing air stripping system at the well field and designing and constructing a GMS to contain the groundwater contaminant plume and to restore groundwater quality at the site, by extracting, treating by air stripping, and reinjecting the contaminated groundwater. The ROD also called for a source control RI/FS to identify and address the source of the groundwater contamination.

In 1988, the source control RI/FS was completed and identified a dry well located adjacent to Alben Dry Cleaners as a significant source of the contamination present at the well field. Alben Dry Cleaners has been in operation since 1965, and dry-cleaning wastes were disposed of in the dry well at least since that time. The source control ROD, signed in September 1988, called for the excavation, removal, and off-site incineration of the contents of the dry well and the surrounding contaminated soils. The implementation of the source control remedy was completed in 1991.

DESCRIPTION OF SIGNIFICANT DIFFERENCES AND THE BASIS FOR THOSE DIFFERENCES

Pursuant to the 1986 ROD, the air-stripped groundwater extracted from the subsurface is to be reinjected to the subsurface via injection wells of the GMS. However, since system startup in 1991, the injection wells have experienced persistent clogging problems and undergone several unsuccessful redevelopment attempts. These operational problems were found to be attributable to the fine material and carbonate/metal oxide precipitate accumulations on the well casings, likely due to the high dissolved solids/hardness content of the groundwater and resultant oxygenation of the water through the air stripping process. Softener/chelating agents/polymers addition and pH adjustment were evaluated via field and bench-scale treatability studies. Although these alternatives were found to be viable, they would be extremely expensive. Discharging the treated water to the East Branch Croton River was examined in conjunction with reinjecting the treated water as part of the RI/FS model simulation effort. The findings of this effort showed that treated water discharge and reinjection would render no significant relative difference in VOC contaminant transport or containment. The findings of a system operation and hydraulic monitoring field study associated with the surface water discharge option indicated no potential adverse impacts on the aquifer and supported the determination as the optimal long-term solution. Therefore, the treated groundwater extracted from the subsurface will be discharged to the East Branch Croton River on-site, instead of reinjected as called for in the 1986 ROD. The surface water discharge will comply with the applicable discharge limitations and requirements. As part of the long-term performance monitoring of the GMS, potential wetland- and floodplain-related impacts associated with the surface water discharge, if any, will be evaluated. An operational contingency plan to address these impacts will be developed, if determined to be necessary, during the monitoring period.

SUPPORT AGENCY COMMENTS

NYSDEC, after careful consideration of the modified remedy, supports the modified remedy due to the environmental, public health, and technical advantages, and due to the fact that the modified remedy significantly changes but does not fundamentally alter the remedy selected in the ROD with respect to scope, performance, protectiveness, or cost.

AFFIRMATION OF STATUTORY DETERMINATIONS

Considering the results of the pH adjustment field study, softener/chelating agents/polymers addition bench-scale treatability study, and surface water discharge system operation and hydraulic monitoring field study, and the changes that have been made to the selected remedy, EPA and NYSDEC believe that the remedy remains protective of human health and the environment, complies with federal and state requirements that are applicable or relevant and appropriate to this remedial action, and is cost-effective. In addition, the modified remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable for this site.

PUBLIC PARTICIPATION ACTIVITIES

EPA and NYSDEC rely on public input to ensure that the concerns of the community are considered in selecting an effective remedy for each Superfund site. Should there be any questions regarding this ESD, please contact:

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