

SUPERFUND RECORDS UNIT
SITE: MCKIN
ID: 8.03
FILE: 6753

FIVE-YEAR REVIEW REPORT

**MCKIN COMPANY
SUPERFUND SITE**

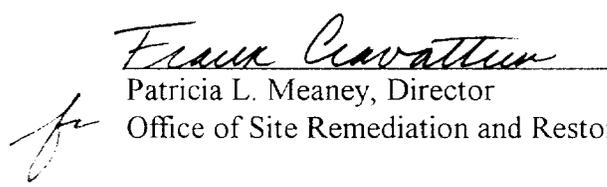
GRAY, MAINE

Prepared by:

U.S. Environmental Protection Agency

Region I

Boston, Massachusetts


Patricia L. Meaney, Director
Office of Site Remediation and Restoration

9/30/98
Date

INTRODUCTION AND SCOPE

EPA Region I conducted this review pursuant to CERCLA section 121(c), NCP section 300.430(f)(4)(ii), and OSWER Directives 9355.7-02 (May 23, 1991), and 9355.7-02A (July 26, 1994). This is a policy (not statutory) review, conducted for pre-October 17, 1986 Remedial Actions. The purpose of a five-year review is to ensure that a remedial action remains protective of human health and the environment. This review follows the first five-year performed for the McKin Site, dated September 22, 1992, summarizing the site history to that point and then detailing the subsequent activities. This includes an ongoing mediation effort begun in June 1997 to reach agreement on the future remedial course for the McKin Site.

The scope of this review includes a document review, ARARs review, and site visits. The following documents were reviewed for this report:

Record of Decision, Remedial Alternative Selection, McKin Site, Gray, Maine, July 22, 1985

McKin Company Consent Decree, Civil Action No. 88-0101-B and Appendix A: Remedial Action Work Plan, September 1987

Five-Year Review Report, McKin Company Hazardous Waste Site, Gray, Maine, September 22, 1992

Water Quality Quarterly Monitoring, Transmittals, April 1994 - September 1998

Technical Analysis of the Ability of Groundwater Extraction and Treatment to Restore the Aquifer in the Area East of Mayall Road: McKin Site, Gray, Maine, March 1996

Evaluation of Technical Impracticability of Groundwater Restoration and Feasibility Analysis of Remedial Alternatives, McKin Superfund Site, Gray, Maine, May 31, 1996

Royal River Watershed: A Water Quality Management Plan, March 1998

Ecological Assessment, Royal River Discharge Zone, McKin Site, Gray, Maine, Draft Technical Memorandum, July 1998

Time Estimates to Meet Royal River Clean-up Criteria, Letter Report, September 2, 1998

Remedial Alternatives Screening Royal River Discharge Zone, McKin Site, Gray, Maine, Technical Memorandum, Revision 1, September 1998

SITE HISTORY

I Background of the McKin Superfund Site

The McKin property is located on the west side of Mayall Road between Route 115 (Yarmouth Road) and Depot Road (formerly designated as Pownal Road) in Gray, Maine. The property is approximately seven acres. The topography of the property and adjacent land is relatively flat. The property is located on a glacial outwash plain comprised of about forty feet of stratified sand, gravel, and boulders overlying granitic bedrock. Surface drainage is contained on the property and precipitation (rain or snowmelt) either evapotranspirates or percolates into the soil.

The Site, as defined by where contamination has come to be located, occupies several hundred acres. Contamination from the McKin property has spread eastward beneath steeply sloping land to the Royal River and northward, also beneath steeply sloping land, toward the confluence of Collyer Brook and the Royal River. Properties within the Site include residential, farm, and wooded areas.

The McKin Company operated a waste collection, transfer and disposal facility between 1965 and 1977. In 1973, local residents reported offensive odors in their water and discoloration of their laundry to local officials. Investigations of the Site showed that the Site soils and ground water were contaminated with solvents. In 1977, those solvents were identified as trichloroethylene (TCE) and 1,1,1-trichloroethane (TCA). The Town of Gray ordered the McKin company to shut down operations. The Town passed an emergency ordinance placing a moratorium on any new construction within two miles of the Site. In 1978, the Town of Gray installed a water line to provide East Gray residents surrounding the Site with clean drinking water.

In 1979 to 1980, Maine Department of Environmental Protection (Maine DEP) supervised the removal of chemical liquids, oil and waste stored in above-ground drums and tanks at the Site and installed ground water monitoring wells. On September 1, 1983, the U.S. Environmental Protection Agency (EPA) placed the site on the National Priorities List (NPL).

Between March and June of 1984, groundwater and soil samples were collected as part of the Remedial Investigation (RI). The sampling of facility soils detected seventeen hazardous substances. The primary contaminant, TCE, was detected in concentrations exceeding 1,000,000 parts per billion (ppb) or 0.1%. TCE was detected in monitoring wells located on adjacent properties in concentrations up to 29,000 ppb and 1,1,1-TCA greater than 450 ppb.

II The Site Remedy

In 1985, EPA completed the RI and the Feasibility Study, which is an evaluation of potential remedies for the Site. In 1985, EPA issued a Record of Decision (ROD) which set forth a clean up plan for the McKin Site. The ROD called for cleanup of Site soils using incineration and

restoration of the ground water to specific standards using a Ground Water Extraction and Treatment System or GETS.

As envisioned by the ROD, the GETS was to extract groundwater and expediently restore the offsite aquifer to the extent practical in a timely manner. Three versions with one to three series of extraction wells were evaluated (costs were based on 25 extraction wells each pumping at 5 gpm) before ultimately leaving the number and locations of wells to be determined in the remedial design process. This system would be operated for a five-year period and then re-evaluated. Based on prior site studies, EPA estimated in the ROD that it would take approximately five years of active restoration combined with source control to reach a target concentration of 50 ppb total VOCs. The ROD, recognizing the aquifer as a former and potential environmental resource, emphasized the need to restore it in a timely manner.

III Remedial Action

Following a pilot study of low temperature thermal aeration, the ROD-selected remedy of full-scale aeration of the VOCs- contaminated soil began on July 8, 1986 and was completed on February 3, 1987. Petroleum-contaminated soils were treated between March 13, 1987 and April 17, 1987. Facility demobilization and closure was completed on June 23, 1987.

In September 1987 a Consent Decree was signed by 320 PRPs, EPA and Maine DEP. It was entered into United States District Court, District of Maine, in May 1988 and groundwater clean-up plans began in June 1988. In March 1989, consultants for the PRPs submitted plans for hydrogeologic investigation, treatability study and GETS design. These plans proposed a phased approach to groundwater restoration, beginning with a limited four extraction well system and further study on the feasibility of expanding the system. EPA and Maine DEP had concerns regarding the portions of the aquifer not receiving active restoration, but approved the phased approach in order to begin groundwater remediation. Construction of this system was completed in September 1990 and following a treatability study, April 15, 1991 was designated as the system's official start date.

In July 1993, consultants for the PRPs submitted a report, Technical Analysis of the Ability of Groundwater Extraction and Treatment to Restore the Aquifer in the Area east of Mayall Road: McKin Site, Gray, Maine. This study was revised twice upon comment from Maine DEP and EPA, with a final submission in March 1996. This study presented hydrogeological and chemical characteristics of the McKin Site area, data from the GETS, and results of modeling efforts. The report concluded that continuation of the GETS or expansion of it to the east side of Mayall Road would not restore the overburden aquifer within two hundred years.

The selected remedy as described in the ROD specified that a re-evaluation of the performance standards, treatment system and public exposures would be made at the end of five years of operating the GETS. The Remedial Action Work Plan (Appendix A to the McKin Consent Decree) specified that the PRPs would submit a report evaluating the performance of the GETS

within fifty-six months of initial operation. Following up on the groundwater modeling presented in the above-mentioned report, EPA and Maine DEP agreed to a proposal from the PRPs to substitute a Technical Impracticability Evaluation for the fifty-six Month report (a Technical Impracticability Evaluation [TI] first assesses whether standard or new technologies are capable of restoring groundwater to drinking water standards within a reasonable time frame. If determined that restoration is not feasible, then the TI must next evaluate methods which will, one, prevent impact to surface waters such as estuaries, wetlands, and streams, and two, prevent exposure with contaminated groundwater. If these three conditions are satisfied, then EPA can waive the regulatory requirements to clean up the groundwater). The agencies also agreed to a moratorium on the operation of the GETS to allow the PRPs to focus on the TI evaluation as well as to observe whether TCE concentrations would rebound with the cessation of pumping.

The PRPs submitted a TI Evaluation on October 31, 1995 and two subsequent revisions. Following review of the third report, EPA concluded that there were significant disagreements between the agencies and the PRPs concerning the flow of groundwater at the site, the fate and transport of contaminants, time estimates for meeting standards in the groundwater, the measures to prevent exposure to contaminated groundwater, and the possibility of successfully preventing impact to the Royal River. Consequently, EPA began exploring the concept of moving the process forward within a mediation framework. On January 15, 1997, EPA met with PRP trustees and together agreed to proceed with mediation.

MEDIATION

Stakeholders of the McKin site were identified during a convening process performed in February and March 1997. These stakeholders then interviewed mediator candidates in April and selected a firm in May 1997. The mediation process began the next month with the development of ground rules and committees to address the various outstanding issues.

In the beginning of September 1997 a Technical Assistance Grant (TAG) was awarded to a group consisting of community members, the Gray Water District, and a local environmental group. In addition, the Town of Gray joined the mediation and has worked cooperatively with the TAG recipients. In October the TAG group selected a technical consultant and together they have also participated in the mediation.

In December 1997 the PRPs proposed a cash-out for a river remedy as part of an overall offer for fulfillment of their responsibilities at the Site. In order to evaluate the sufficiency of this proposal, EPA, with assistance from Maine DEP and USGS, conducted a focused field investigation in the winter and spring of 1998. The results of this field study are currently being reviewed and discussed within the mediation framework. EPA believes it has gathered the necessary data to support a change in the remedial approach to be taken for the McKin Site and expects to reach conclusion of the mediation by the end of the calendar year. It is uncertain at this time whether consensus with this approach will be reached with all the parties involved in the mediation process.

SITE VISITS

The EPA project manager has visited the site on numerous occasions in the past two years with the latest visit on August 19, 1998. The groundwater treatment plant and subsurface infiltration beds are within the fenced area on the property of the former McKin Company facility. The surface of the infiltration beds and unused areas of the property are vegetated and no signs of excessive erosion were observed. As noted earlier, EPA and Maine DEP have agreed to a moratorium on operation of the GETS during the discussion on technical impracticability.

An inspection was also made of the groundwater discharge zone in the floodplain/wetland area on the west side of Royal River. The project manager found disturbed areas from the recent EPA field investigation, with ruts from the drilling equipment still visible. To a lesser extent, ruts were also visible in the upland property used for access. Native vegetation was reappearing in the wetlands and grass was growing in the upland access route.

On September 16-18, 1998, Maine DEP staff conducted a survey of the Royal River, beginning upstream of the discharge zone and continuing for several miles downstream. Many instances of recreational use and access were documented, however no current use of the Royal River as a drinking water source was observed.

Discussions with the Gray Town Manager confirmed that the emergency restriction has long since ended and there are no other current restrictions beyond standard zoning controls relevant to the McKin area.

ARARs

The five-year review process mandates that the Applicable or Relevant and Appropriate Requirements (ARARs) set in the ROD be compared at this time with the most recently promulgated standards with respect to site-related contaminants of concern. In this manner, EPA can evaluate whether the selected remedy remains protective of human health and the environment by considering the changes in ARARs that have occurred since remedial action was implemented.

The McKin Company Site is a pre-SARA Site, whose ROD contains health-based standards and not ARARs. Since the implementation of remedial action, a MCL, Maximum Contaminant Level, has been established for TCE. Whereas the ROD used a health-based standard of 28 ppb for TCE, the MCL is 5 ppb. Presently, operation of the GETS has been suspended while the PRPs and agencies work to resolve the question of technical impracticability. Both the groundwater performance standards set in the ROD and the newer MCL for TCE have been met at some sampling locations within the overburden aquifer. There still exists areas either where sampling data is still above the MCLs or where there is insufficient data to make a determination.

The issue of the bedrock aquifer also complicates the achievement of performance standards and MCLs. From historical data it is known that the bedrock aquifer was contaminated by site-related contaminants. From the data, it is also considered likely that DNAPL has entered the bedrock where it will act as a long-term TCE source to the overburden. However, since the ROD determined that restoration of the bedrock aquifer was not technically feasible, no data from this aquifer has been collected since the ROD. Consequently, the water quality of the bedrock aquifer, which had been the drinking water source for residents in the area, is unknown.

ARARs associated with the Royal River will have to be addressed. At the time of the ROD, VOCs were not detected in the river (page seven of the ROD) and therefore surface water standards were not set in the ROD. Since the implementation of the remedial action, site-related contaminants, principally TCE, have been detected in the Royal River. In response to requirements of the Clean Water Act, the State of Maine has promulgated surface water standards (Maine Ambient Water Quality Criteria) which are exceeded for as much as twelve miles downstream from the discharge zone. This ARAR is presently being addressed in the mediation process and identification of remedies to meet this ARAR was the purpose of EPA's 1998 field investigation and September 1998 Remedial Alternatives Screening Royal River Discharge Zone, McKin Site, Gray, Maine.

STATEMENT OF PROTECTIVENESS

Exposure to contaminated groundwater, as indicated in the ROD and the first five-year review, continues to be a potential threat to human health. As of the date of this review, no one is using contaminated groundwater for a drinking water source or other use. There, however, is no government-sponsored (town, county, or state) prohibition against installation of water wells within the contaminated aquifer and building of residential homes continues above and in the vicinity of the contaminated aquifer. The Town of Gray, the Gray Water District, and property owners above the contaminated aquifer or adjacent to it have concerns regarding the potential future exposure for the following reasons: the Gray Water District is nearing capacity of its well field, in large part because of the use of public water in the McKin area; a thirty percent growth rate of housing units projected for Gray for 1990-2000 is expected to continue into the next decade; and installation of bedrock wells near the contaminant plume may induce contamination to flow to these wells. Therefore without adequate institutional controls, continued residential development in this area has the potential to create a nonprotective situation.

In addition to the concern raised with groundwater, the TCE discharging into the Royal River exceeds Maine's Ambient Water Quality Criteria for an extended length of the river. While a recent Maine DEP investigation of the river downstream from the discharge zone documented substantial recreational use of the river, no current use of the river as a drinking water source was observed. Again, without adequate measures (i.e., active remediation, institutional controls, or a combination of the two) to prevent use of the river as a drinking water source, the potential for a human health risk exists.

Finally, sampling results from springs near the river and from the riverbed in the discharge zone suggest possible risk to environmental receptors.

All three of these potential threats are undergoing evaluation in the mediation process.

RECOMMENDATIONS

The ROD-remedy selected has effectively dealt with soil contamination at the McKin facility. The expansion of public water to the area has eliminated exposure to contaminated groundwater for the present population. An inspection of the Royal River by Maine DEP in September 1998 identified multiple recreational use of the river but no observed use as a drinking water source. An ecological assessment has identified potential risk to environmental receptors at Boiling Springs and the discharge zone within the river.

Concerns over future residential development within the extent of the overburden contamination have been noted. In addition, the uncertainty of the extent of the bedrock contamination raises concerns over inducing flow into previously clean areas. Downstream communities have identified potential well fields adjacent to the Royal River for their future use.

Consequently, it is recommended that the evaluation of the remedy, as required in the ROD and specified in the Consent Decree, continue. This evaluation should also include the necessity of institutional controls to prevent exposure to contaminated groundwater and institutional controls to address the exposure to contaminated surface water in Royal River and Boiling Springs. Additionally, it should address the need for additional remedial action.

The mediation process has brought tremendous participation of the community into these evaluations. It is recommended that these evaluations continue within the mediation framework to ensure that any remedial action chosen to address the long-term issues for the McKin Site is reached with participation of the community.

It is also recommended that EPA continue working with the property owners to restore the 1998 field study area and access route.

NEXT REVIEW

EPA must complete a five-year review every five years, from the award of contract, until the performance standards stated in the ROD have been reached and the Site allows for unlimited use and unrestricted exposure. The next review is scheduled for September 2003 and shall include a summary of the contents of this review, the conclusion of the mediation effort, the steps taken to address the protectiveness issues noted previously, and the necessity for further reviews.