DECLARATION FOR THE EXPLANATION OF SIGNIFICANT DIFFERENCES

SITE NAME AND LOCATION

Coakley Landfill Superfund Site
North Hampton and Greenland, New Hampshire

STATEMENT OF PURPOSE

This decision document sets forth the basis for the determination to issue the attached Explanation of Significant Differences (ESD) for the Coakley Landfill Superfund Site in North Hampton and Greenland, New Hampshire.

STATUTORY BASIS FOR ISSUANCE OF THE ESD

Under Section 117(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9617(c), if the U.S. Environmental Protection Agency (EPA) determines that the remedial action being undertaken at a Site differs significantly from the Record of Decision (ROD) for that Site, EPA shall publish an explanation of the significant differences between the remedial action being undertaken and the remedial action set forth in the ROD and the reasons such changes are being made. Section 300.435(c) of the National Contingency Plan (NCP), 40 C.F.R. § 300.435(c), and EPA guidance (Office of Solid Waste and Emergency Response [OSWER] Directive 9355.3-02), indicate that an ESD, rather than a Record of Decision (ROD) amendment, is appropriate where the changes being made to the remedy are significant but do not fundamentally alter the overall remedy with respect to scope, performance, or cost. Because the adjustments to the ROD provided in the ESD are significant but do not fundamentally alter the overall remedy for the Site with respect to scope, performance, or cost, this ESD is properly being issued.

In accordance with Section 300.435(c) of the NCP, this ESD and supporting documentation will become part of the Administrative Record which is available for public review at both the EPA Region I Record Center in Boston, Massachusetts and the North Hampton Public Library in North Hampton, New Hampshire.

OVERVIEW OF THE ESD

Since the Record of Decision was issued on June 28, 1990, ground water monitoring has been conducted by the Coakley Landfill Group under EPA and New Hampshire Department of Environmental Services oversight in accordance with the Consent Decree Scope of Work for the Site. Several sampling events have occurred after the landfill cap was installed. An evaluation of the data has resulted in EPA's determination that the ground water extraction and treatment portion of the source control remedy specified in the ROD, should be eliminated since the affect of the waste relocation and cap is sufficient to allow the cleanup of the aquifer and achievement of applicable or relevant and appropriate Federal and State requirements without the construction of the extraction and treatment system.

DECLARATION

For the foregoing reasons, by my signature below, I approve the issuance of an Explanation of Significant Differences for the Coakley Landfill Superfund Site in North Hampton and Greenland, New Hampshire, and the changes stated therein.

9/29/99
Date

Patricia L. Meaney, Director
Office of Site Remediation and Restoration
U.S. Environmental Protection Agency
Region I, New England

EXPLANATION OF SIGNIFICANT DIFFERENCES
COAKLEY LANDFILL SUPERFUND SITE
NORTH HAMPTON AND GREENLAND, NEW HAMPSHIRE

I. INTRODUCTION

A. Site Name and Location

Site Name: Coakley Landfill Superfund Site

Site Location: Towns of North Hampton and Greenland, Rockingham County, New Hampshire

B. Lead and Support Agencies

Lead Agency: United States Environmental Protection Agency

Support Agency: New Hampshire Department of Environmental Services

C. Legal Authority

Under Section 117(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9617(c), Section 300.435(c) of the National Contingency Plan (NCP), 40 C.F.R. § 300.435(c), and U.S. Environmental Protection Ageny (EPA) guidance (Office of Solid Waste and Emergency Response [OSWER] Directive 9355.3-02), if EPA determines that differences in the remedial action significantly change but do not fundamentally alter the remedy selected in the Record of Decision (ROD) with respect to scope, performance, or cost, EPA shall publish an explanation of the significant differences between the remedial action being undertaken and the remedial action set forth in the ROD and the reasons such changes are being made.

D. Summary of Circumstances Necessitating this Explanation of Significant Differences

Ground water monitoring has been conducted by the Coakley Landfill Group under EPA and NHDES oversight in accordance with the Consent Decree Scope of Work for the Site. An evaluation of this data has been performed which took into account standards which must be achieved (Applicable or Relevant and Appropriate Federal and State environmental laws and regulations [ARARs]) and public health risks. This evaluation used data which were not available when the ROD for the source control remedy was written. Specifically, this data includes several sampling events which have occurred after the landfill cap was installed and which include constituents which demonstrate the natural attenuation processes active at the Site.

E. Availability of Documents

This Explanation of Significant Differences (ESD) and supporting documentation shall become part of the Administrative Record for the Site. The ESD, supporting documentation for the ESD, and the Administrative Record are available to the public at the following locations and may be reviewed at the times listed:

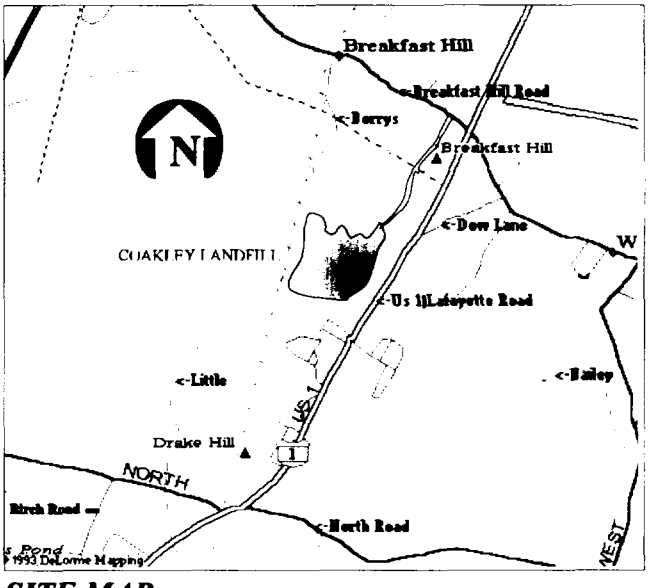
U.S. Environmental Protection Agency
Records Center
1 Congress Street
Boston, MA 02114-2023
(617) 918-1440
Weekdays from 10:00 a.m. to 1:00 p.m.,
and from 2:00 p.m. to 5:00 p.m.

North Hampton Public Library
235 Atlantic Avenue
North Hampton, NH 03878
(603) 692-4587
Monday through Thursday from 10:00 a.m. to 8:00 p.m. and Friday from 10:00 a.m. to 5:00 p.m.

II. SUMMARY OF SITE HISTORY, CONTAMINATION PROBLEMS, AND SELECTED REMEDY

A. Site History and Contamination Problems

The Coakley Landfill Superfund Site (the Site) includes approximately 92 acres located within the Towns of Greenland and North Hampton, Rockingham County, New Hampshire (See *Site Map*). The actual landfill covers approximately 27 acres of this property. The Site is located about 400 to 800 feet west of Lafayette Road (U.S.Route 1), directly south of Breakfast Hill Road, and about 2.5 miles northeast of the center of the Town of North Hampton. A more complete description of the Site can be found in the Remedial Investigation Report, Chapter 2, Pages 2-1 to 2-6.



SITE MAP

Landfill operations began in 1972, with the southern portion of the Site used for refuse from the New Hampshire municipalities of Portsmouth, North Hampton, Newington, and New Castle, along with Pease Air Force Base. Concurrent with landfill operations, rock quarrying was conducted at the Site from approximately 1973 through 1977. Much of the refuse disposed of at Coakley Landfill was placed in open (some liquid-filled) trenches created by rock quarrying and sand and gravel mining. In 1982, the City of Portsmouth began operating a refuse-to-energy plant on leased property at Pease Air Force Base. From July 1982 through July 1985, Pease Air Force Base and the municipalities of Rye, North Hampton, Portsmouth, New Castle, Newington and Derry, among others, began transporting their refuse to this plant for incineration. The Coakley Landfill generally accepted only incinerator residue from the new plant after July, 1982. In March 1983, the New Hampshire Bureau of Solid Waste Management ordered the landfill closed to all waste disposal except burnt residue from the incinerator. In July, 1985, the landfill was closed to all disposal activities.

In 1979, the New Hampshire Waste Management Division received a complaint concerning leachate breakouts in the area. A subsequent investigation by the Bureau of Solid Waste Management resulted in the discovery of allegedly empty drums with markings indicative of cyanide waste.

A second complaint was received in early 1983 by the New Hampshire Water Supply and Pollution Control Commission (WSPCC) regarding the water quality from a domestic drinking water well. Testing revealed the presence of five different Volatile Organic Compounds (VOCs).

A subsequent confirmatory sampling beyond these initial wells detected VOC contamination to the south, southeast, and northeast of the Coakley Landfill. As a result, the Town of North Hampton extended public water to Lafayette Terrace in 1983 and to Birch and North Roads in 1986. Prior to this time, commercial and residential water supply came from private wells.

Also in 1983, the Rye Water District completed a water main extension along Washington Road to the corner of Lafayette Road and along Dow Lane. This extension brought the public water supply into the area due east and southeast of the Rye Landfill. In December 1983, the Coakley Landfill was proposed for listing on the National Priority List (NPL), and in 1986 it was listed and ranked as No. 689.

A cooperative agreement was signed with the State of New Hampshire on August 12, 1985 to conduct a Remedial Investigation/Feasibility Study (RI/FS). The contractor, Roy F. Weston, Inc., completed the RI and the FS which were released for public comment on October 31, 1988, and March 2, 1990, respectively. The Proposed Plan containing EPA's preferred alternative was released with the FS. On June 28, 1990, EPA issued a Record of Decision (ROD) for the source control operable unit of the Coakley Landfill Superfund Site (Site). On March 2, 1991, EPA issued an ESD concerning modifications to the source control remedy related to landfill cap construction and emissions from air strippers proposed to be used to treat the ground water. A second ESD was issued on May 17, 1996, which changed active landfill gas collection and treatment to a passive collection system.

B. Summary of the Selected Remedy

The remedy for the Site is divided into two separate "operable units." The first operable unit (source control) provides for the remediation of the source of contamination at the Coakley Site including the contaminated ground water beneath and in the vicinity of the landfill. The source control remedy involves consolidating sediments and solid waste followed by capping the landfill and extracting and treating ground water from beneath the landfill. The second operable unit (management of migration) addresses ground water contamination that has migrated from the landfill, beyond the property boundary. The management of migration portion of the remedy is natural attenuation of the contaminated ground water along with institutional controls to prevent exposure to the contamination.

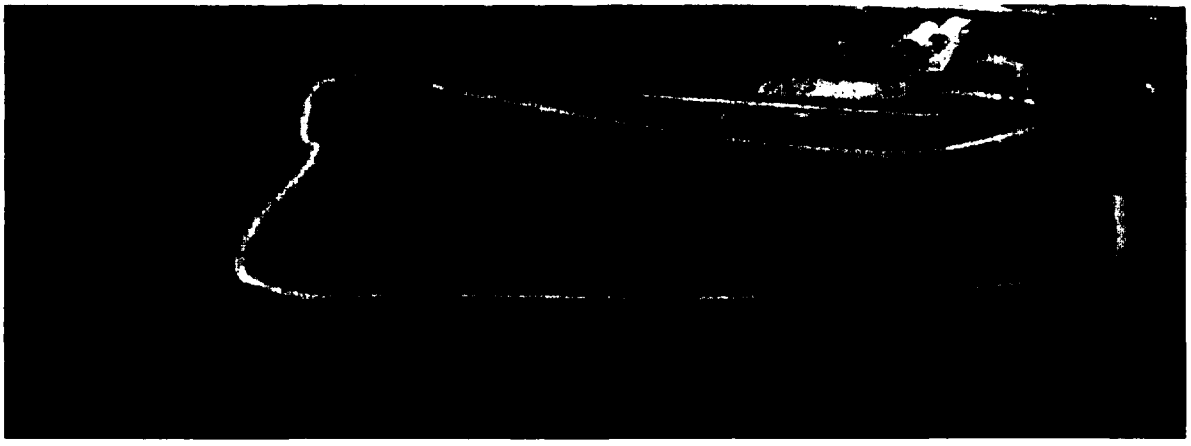
The major components of the the source control remedy as modified by the first two ESDs are:

1. Excavation with disposal onto the landfill of sediment in the wetlands
2. Consolidation of solid waste;
3. Capping the landfill;
4. Fencing the landfill;
5. Collecting and venting landfill gases;
6. Extracting and treating ground water from beneath the landfill;
7. Long-term environmental monitoring; and
8. Institutional controls where possible.

This ESD only affects one component of the source control remedy, extracting and treating ground water from beneath the landfill.

III. DESCRIPTION OF SIGNIFICANT DIFFERENCES

With the exception of the ground water collection and treatment system, all construction of the source control remedy is complete. The landfill cap has been water tight since the Spring of



1998 and all layers were complete by the Fall of 1998 (see above photograph). EPA permitted the construction of the ground water collection and treatment system to be delayed to allow an evaluation of the impacts of the landfill cap on the ground water. This evaluation took into

account the ground water monitoring which has been performed by the Coakley Landfill Group three times a year over the last several years. The results of this evaluation indicate that elimination of the ground water extraction and treatment component of the selected source control remedy could achieve significant cost savings while remaining protective of public health and the environment.

The ROD required several ground water extraction wells to be located along the southern and eastern perimeters of the landfill to prevent the continuing flow of contaminated ground water away from the landfill. Discharge of the treated ground water would be to recharge trenches along the west and northwest edges of the landfill. Pre-design investigations determined that the best location for the extraction wells would be beneath the landfill only on the southern boundary with discharge of the treated ground water into recharge trenches beneath the landfill along the eastern boundary.

Consolidation of landfill waste and construction of the cap changed the chemical and hydrologic conditions at the landfill to the extent that the ground water system is no longer required. Prior to construction of the cap, a significant volume of waste was excavated from the northern edge of the landfill and placed on top of the landfill. Much of this waste was located beneath the water table and thus was a continuing and significant source of ground water contamination. Removing this waste from contact with the ground water has resulted in a reduction in the amount of contamination which can migrate away from the landfill.

Furthermore, with the completion of the cap, rainwater and snow melt can no longer infiltrate the landfill and leach contaminants from the buried waste. In addition, the ground water elevation beneath the cap has lowered such that much less of the buried waste material is still in contact with the ground water. The prevention of infiltration and the lowering of the ground water have resulted in a further reduction in the amount of contamination which could migrate away from the landfill. The table on the next page illustrates the reductions in contaminant concentrations that have occurred between November of 1996 (when waste was still in the ground water at the northern edge of the landfill) and the latest sampling round, April of 1999.

These four wells are located closest to the landfill near its western perimeter and are most representative of the ground water which is flowing away from the landfill. The only two compounds in these wells currently exceeding their cleanup levels are benzene (above 5 µg/l in MW-9 and MW-11) and arsenic (above 50 µg/l in MW-9). Each well, except MW-9, shows a significant decrease in contaminant concentrations since the waste was removed from the ground water in the northern portion of the landfill and the cap was completed. MW-9 shows a significant increase in chlorobenzene. However, since reaching a maximum concentration of 215 µg/l in August of 1998, this concentration has decreased sharply to 77 µg/l, below the 100 µg/l cleanup level. A similar situation has occurred with arsenic in MW-9. Concentrations of all constituents should continue to decrease and all of these reductions taken together are sufficient to allow the cleanup of the aquifer and achievement of ARARs without the construction of the extraction and treatment system. No impact on the second operable unit

remedy, management of migration through natural attenuation, is expected as a result of the elimination of the ground water extraction and treatment system portion of the source control remedy. The present value of the cost savings which will result from not constructing, operating and maintaining the system is approximately $14 million.

Contaminant Concentrations in Representative Down-Gradient Wells Before and After Capping
(all concentrations in µg/l)

Principal Organic and Inorganic Contaminants	MW-8		MW-9		MW-10		MW-11	
	11/18/96	4/19/99	11/18/96	4/19/99	11/18/96	4/19/99	11/18/96	4/19/99
Benzene	12	2	26	7	10	4	32	19
Chlorobenzene	3	ND	5	77	100	ND	2	5
Chloroethane	16	11	ND	4	12	ND	54	29
Ethylbenzene	14	3	ND	5	32	ND	36	19
Toluene	92	ND	10	ND	2	ND	1100	55
1,1-Dichloroethane	7	2	ND	ND	ND	ND	29	3
Xylene (total)	18	ND	4	2	13	ND	117	60
Arsenic	6.6	4	28.6	84	88.1	14	23.8	13
Chromium	1.9	1	1.1	3	1	1	4.5	2
Nickel	16.2	14	11.4	29	25.8	10	30.9	21

Therefore, after consultation with NHDES, EPA has concluded that the ground water extraction, treatment and disposal system will not be required at the Coakley Landfill Superfund Site.

The proposed modification embodied in this ESD will protect human health and the environment, will comply with all applicable or relevant and appropriate Federal and State requirements, and will provide for a long-term and permanent remedy for the Site to a similar degree as the remedy outlined in the ROD, as modified by the first and second ESDs. In addition, the proposed modification to the remedy will pose no short-term, construction-related risks while eliminating construction costs, as well as, operation and maintenance costs.

IV. SUPPORT AGENCY COMMENTS

The State of New Hampshire has participated with EPA in reviewing the modifications to the remedy which are described herein and concurs with the approach adopted by EPA.

V. STATUTORY DETERMINATION

Considering the above outlined adjustment to the selected remedy set forth in the ROD, as modified in the first two ESDs, EPA believes that the remedy remains protective of human health and the environment, complies with all Federal and State requirements that are applicable or relevant and appropriate to this remedial action, and is cost-effective.

VI. PUBLIC INFORMATION

This ESD and the Administrative Record are available for public review at the locations and times listed in Section I., above.