UNITED STATES DISTRICT COURT
DISTRICT OF NEW HAMPSHIRE

UNITED STATES OF AMERICA,

Plaintiff,

v.

CIVIL ACTION NO. 92-123-D

CITY OF PORTSMOUTH, NEW HAMPSHIRE,
TOWN OF NORTH HAMPTON, NEW HAMPSHIRE,
TOWN OF NEWINGTON, NEW HAMPSHIRE,
BOOTH FISHERIES CORPORATION,
BROWNING-FERRIS INDUSTRIES OF NEW HAMPSHIRE, INC.,
CUSTOM POOLS, INC.,
ERIE SCIENTIFIC COMPANY,
GARY W. BLAKE, INC.,
GEORGE FRISBEE,
GTE PRODUCTS CORPORATION,
GYPSUM HAULAGE, INC.,
JET-LINE SERVICES, INC.,
K.J. QUINN & CO., INC.,
K MART CORPORATION,
MOBIL OIL CORPORATION,
MONTGOMERY WARD & CO., INCORPORATED,
NEW ENGLAND TELEPHONE AND TELEGRAPH COMPANY,
NEWINGTON MIDAS MUFFLER,
NORTHERN UTILITIES, INC.,
PIKE ASSOCIATES, INC.,
POST MACHINERY COMPANY, INC.,
PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE,
R.M. PHILBRICK TRUCKING CO., INC.,
S & H PRECISION MFG. CO., INC.,
SAEF LINCOLN MERCURY, INC.,
SANEL AUTO PARTS, INC.,
SEACOAST VOLKSWAGEN, INC.,
SIMPLEX WIRE & CABLE COMPANY,
UNITED TECHNOLOGIES CORPORATION,
WASTE MANAGEMENT OF MAINE, INC.,
and WASTE MANAGEMENT OF NEW HAMPSHIRE, INC.,

Defendants.

STATE OF NEW HAMPSHIRE,

Plaintiff,

v.

CIVIL ACTION NO.

CITY OF PORTSMOUTH, NEW HAMPSHIRE,
TOWN OF NORTH HAMPTON, NEW HAMPSHIRE,

TOWN OF NEWINGTON, NEW HAMPSHIRE,
BOOTH FISHERIES CORPORATION,
BROWNING-FERRIS INDUSTRIES OF NEW HAMPSHIRE, INC.,
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S & H PRECISION MFG. CO., INC.,
SAEF LINCOLN MERCURY, INC.,
SANEL AUTO PARTS, INC.,
SEACOAST VOLKSWAGEN, INC.,
SIMPLEX WIRE & CABLE COMPANY,
UNITED STATES DEPARTMENT OF THE AIR FORCE,
UNITED STATES DEPARTMENT OF THE NAVY,
UNITED TECHNOLOGIES CORPORATION,
WASTE MANAGEMENT OF MAINE, INC.,
and WASTE MANAGEMENT OF NEW HAMPSHIRE, INC.,

Defendants.

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IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEW HAMPSHIRE

UNITED STATES OF AMERICA and STATE OF NEW HAMPSHIRE, Plaintiffs, v. City of Portsmouth, New Hampshire, et. al., Defendants.	)	CIVIL ACTION NO.

CONSENT DECREE

I. BACKGROUND

A. The United States of America ("United States"), on behalf of the Administrator of the United States Environmental Protection Agency ("EPA"), filed a complaint in this matter pursuant to Sections 106 and 107 of the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), 42 U.S.C. §§ 9606, 9607.

B. The United States in its complaint seeks: (1) performance of studies and response work by the Defendants at the Site in conformity with the Record of Decision (as defined below) and the National Contingency Plan, 40 C.F.R. Part 300 as amended) ("NCP"); (2) declaration of Settling Defendants' liability for Future Response Costs and certain Oversight Costs;

and (3) such other relief as the Court finds appropriate.

C. In accordance with the NCP and Section 121(f)(1)(F) of CERCLA, 42 U.S.C. § 9621(f)(1)(F), EPA notified the State of New Hampshire (the "State") on March 15, 1991 of negotiations with potentially responsible parties regarding the remedial design and remedial action for the Site, and EPA has provided the State with an opportunity to participate in such negotiations and be a party to this Consent Decree.

D. The State of New Hampshire (the "State") has also filed a complaint against the defendants in this Court alleging that the defendants in that action are liable to the State under Section 107 of CERCLA, 42 U.S.C. § 9607, and New Hampshire RSA 147-B for (1) performance of response work at the Site, including post remedial monitoring and operation and maintenance; (2) declaration of Defendants' liability for Future Response Costs and certain Oversight Costs; and (3) such other relief as the Court finds appropriate.

E. In accordance with Section 122(j)(1) of CERCLA, 42 U.S.C. § 9622(j)(1), EPA notified the Federal natural resource trustee on January 28, 1991 of negotiations with potentially responsible parties regarding the release of hazardous substances that may have resulted in injury to the natural resources under Federal trusteeship and encouraged the trustee to participate in the negotiation of this Consent Decree.

F. The Settling Defendants that have entered into this Consent Decree do not admit any liability to the Plaintiffs, and

the Settling Federal Agencies, as defined below, do not admit any liability to the State or to the Settling Defendants arising out of the transactions or occurrences alleged in the complaints.

G. Pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, EPA placed the Site on the National Priorities List, set forth at 40 C.F.R. Part 300, Appendix B, by publication for final listing in the Federal Register on June 10, 1986, 51 Fed. Reg. 21073.

H. In response to a release or a substantial threat of a release of a hazardous substance(s) at or from the Site, the State, under a cooperative agreement with EPA, commenced on May 6, 1986, a Remedial Investigation and Feasibility Study ("RI/FS") for the Site pursuant to 40 C.F.R. § 300.430.

I. EPA issued a Remedial Investigation ("RI") Report on October 31, 1988, and issued a Feasibility Study ("FS") Report on March 9, 1990.

J. Pursuant to Section 117 of CERCLA, 42 U.S.C. § 9617, EPA published notice of the issuance of the FS Report and of the proposed plan for remedial action on March 9, 1990 in a major local newspaper of general circulation. EPA provided an opportunity for written and oral comments from the public on the proposed plan for remedial action. EPA received comments on the FS and the Proposed Plan from members of the public and from some of the Settling Defendants. A copy of the transcript of the public meeting is available to the public as part of the administrative record upon which the Regional Administrator based the selection of the response action.

K. The decision by EPA on the remedial action to be implemented at the Site is embodied in the Record of Decision ("ROD"), executed on June 28, 1990, on which the State has given its concurrence. The ROD includes EPA's explanation for any significant differences between the final and the proposed plan as well as a responsiveness summary to the public comments. Notice of the ROD was published in accordance with Section 117(b) of CERCLA.

L. Based on the information presently available to EPA and the State, EPA and the State believe that the Work will be properly and promptly conducted by the Settling Defendants.

M. The Remedial Action selected by EPA in the ROD and the Work to be performed by the Settling Defendants shall constitute a response action taken or ordered by the President solely for the purposes of Section 113(j) of CERCLA.

N. The Parties recognize, and the Court by entering this Consent Decree finds, that implementation of this Consent Decree will expedite the cleanup of the Site and will avoid prolonged and complicated litigation between the Parties, and that this Consent Decree is fair, reasonable, and in the public interest.

O. The parties agree that the remedy selected in the ROD as adopted by EPA and embodied herein is protective of the public health and the environment and is consistent with CERCLA and the National Contingency Plan ("NCP").

NOW, THEREFORE, it is hereby Ordered, Adjudged, and Decreed:

II. JURISDICTION

1. This Court has jurisdiction over the subject matter of this action pursuant to 28 U.S.C. §§ 1331 and 1345; 42 U.S.C. §§ 9606, 9607 and 9613(b); 42 U.S.C. § 6973; and pendent jurisdiction over the claims asserted by the State arising under the laws of New Hampshire. This Court also has personal jurisdiction over the Settling Defendants. For the purposes of this Consent Decree and the underlying complaints, Settling Defendants waive all objections and defenses that they may have to jurisdiction of the Court or to venue in this District. Settling Defendants shall not challenge the terms of this Consent Decree or this Court's jurisdiction to enter and enforce this Consent Decree.

III. PARTIES BOUND

2. This Consent Decree applies to and is binding upon the United States, and the State, and Settling Defendants and their heirs, successors and assigns. Any change in ownership or corporate status of a Settling Defendant including, but not limited to, any transfer of assets or real or personal property shall in no way alter such Settling Defendant's responsibilities under this Consent Decree.

3. Settling Defendants shall provide a copy of this Consent Decree to each contractor and subcontractor hired to perform the Work required by this Consent Decree and shall condition all contracts and subcontracts entered into hereunder upon

performance of the Work in conformity with the terms of this Consent Decree. Settling Defendants shall nonetheless be responsible for ensuring that their contractors and subcontractors perform the Work contemplated herein in accordance with this Consent Decree. With regard to the Work undertaken pursuant to this Consent Decree, each contractor and subcontractor shall be deemed to be in a contractual relationship with the Settling Defendants within the meaning of Section 107(b)(3) of CERCLA, 42 U.S.C. § 9607(b)(3). Thus, as to acts or omissions of contractors, the Settling Defendants shall not assert a defense based upon Section 107(b)(3) of CERCLA, 42 U.S.C. §9607(b)(3), provided, however, that this shall not affect the rights of Settling Defendants as against their contractors or sub-contractors.

IV. DEFINITIONS

4. Unless otherwise expressly provided herein, terms used in this Consent Decree which are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in CERCLA or in such regulations. Whenever terms listed below are used in this Consent Decree or in the appendices attached hereto and incorporated hereunder, the following definitions shall apply:

"Additional Work" shall mean all activities required by Section VII herein.

"CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42

U.S.C. §§ 9601 et. seq.

"Cleanup Levels" shall mean the numerical criteria selected to reflect the degree of cleanup to be achieved in the soil, sediments and groundwater at the Site. These criteria are set forth in Sections C.1 and E.1 of the SOW.

"Consent Decree" shall mean this Decree and all appendices attached hereto. In the event of conflict between this Decree and any appendix, this Decree shall control.

"Day" shall mean a calendar day unless expressly stated to be a working day. "Working day" shall mean a day other than a Saturday, Sunday or Federal legal holiday. In computing any period of time under this Consent Decree, where the last day would fall on a Saturday, Sunday, or Federal legal holiday, the period shall run until the close of business of the next working day.

"EPA" shall mean the United States Environmental Protection Agency and any successor departments or agencies of the United States.

"NHDES" shall mean the New Hampshire Department of Environmental Services and any successor departments or agencies of the State.

"Future Response Costs Other than Oversight Costs" (hereinafter "Future Response Costs") shall mean all direct and indirect costs related to this Consent Decree incurred by the United States and the State not inconsistent with the NCP following the lodging of this Consent Decree, other than

Oversight Costs as defined below. Future Response Costs shall include, but not be limited to costs incurred pursuant to Section X (Access), costs of performing any portion of the Work (including but not limited to the development of plans, reports and other items pursuant to Section XII, Additional Work pursuant to Section VII, costs of Periodic Review pursuant to Section VIII and costs of Endangerment and Future Emergency Response pursuant to Section XVII), costs of enforcing this Consent Decree, and any other costs related to this Consent Decree other than Oversight Costs: including but not limited to payroll costs, contractor costs, travel costs, and laboratory costs.

"Institutional Controls" shall mean deed restrictions and other equivalent requirements and controls developed for one or more of the following purposes: 1) to restrict the use of groundwater at the Site prior to the attainment of the Performance Standards; 2) to limit human or animal exposure to Waste Material; 3) to ensure non-interference with the performance of the Work; and (4) to ensure the integrity and effectiveness of the Work.

"National Contingency Plan" or "NCP" shall mean the National Oil and Hazardous Substances Pollution Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, including, but not limited to, any amendments thereto.

"Operation and Maintenance" or "O & M" shall mean all activities required pursuant to this Consent Decree and the Scope

of Work (SOW) to maintain the effectiveness of the Remedial Action, including all activities set forth in the Operation and Maintenance Plan developed pursuant to this Consent Decree and the Scope of Work (SOW).

"Oversight Costs" means the direct and indirect costs incurred by the United States and the State after the lodging date of this Consent Decree for review, inspection, analysis and verification of the performance of the Work required under the terms of this Consent Decree, including but not limited to payroll, travel, contractor and laboratory costs incurred for this purpose. Oversight costs shall include the costs of reviewing plans, reports, or other items submitted by Settling Defendants pursuant to this Consent Decree, but shall not include any costs incurred by EPA to develop plans, reports, or other items pursuant to Paragraph 40, Section XII (Submissions Requiring Agency Approval) of this Consent Decree. Oversight shall include the cost of any QA official required by EPA independent of the Supervising Contractor to conduct a QA program during the construction phase of the project. Oversight costs shall not include costs incurred by the United States or the State in performing any obligations pursuant to Section X (Access), Paragraph 91 of Section XXIV (Covenants Not to Sue by Plaintiffs), or Paragraph 53 of Section XVII (Endangerment and Future Emergency Response). Oversight costs shall also not include any costs incurred for enforcement of this Consent Decree.

"Paragraph" shall mean a portion of this Consent Decree identified by an arabic numeral or an upper case letter.

"Parties" shall mean the United States, the State of New Hampshire, and the Settling Defendants.

"Past Response Costs" shall mean all costs incurred in connection with Operable Unit 1, including, but not limited to, payroll costs, contractor costs, travel costs, laboratory costs, and interest and indirect costs, that the United States and the State incurred not inconsistent with the NCP with regard to the Site prior to lodging of this Consent Decree.

"Performance Standards" shall mean those cleanup standards, cleanup levels, treatment standards, institutional controls, and other substantive requirements, criteria or limitations set forth in the ROD and in Sections C. D. and E. of the SOW.

"Plaintiffs" shall mean the United States and the State of New Hampshire.

"RCRA" shall mean the Solid Waste Disposal Act, as amended, 42 U.S.C. §§ 6901 et seq. (also known as the Resource Conservation and Recovery Act).

"Record of Decision" or "ROD" shall mean the EPA Record of Decision relating to Operable Unit 1 at the Site signed on June 28, 1990, by the Regional Administrator, EPA Region I, all attachments thereto, and the Explanation of Significant Differences or "ESD" dated March 22, 1991.

"Remedial Action" shall mean all those activities, except for Remedial Design and Operation and Maintenance, but including

Additional Work required under Section VII hereof, to be undertaken by the Settling Defendants pursuant to this Consent Decree.

"Remedial Action Work Plan" shall mean the document submitted by the Settling Defendants for implementation of Remedial Action activities required under this Consent Decree and the Scope of Work (SOW) and any modifications thereto in accordance with this Consent Decree and the SOW.

"Remedial Design" shall mean those activities to be undertaken by the Settling Defendants to develop the pre-design and final plans and specifications for the Remedial Action pursuant to the Initial Remedial Design Steps, the Pre-Design Steps and the Remedial Design Work Plan.

"Remedial Design Work Plan" shall mean the document submitted by the Settling Defendants for implementation of Remedial Design activities other than Pre-Design activities required under this Consent Decree and the SOW and any modifications thereto in accordance with this Consent Decree and the SOW.

"Scope of Work" or "SOW" shall mean the scope of work for implementation of the Remedial Design, Remedial Action, and Operation and Maintenance at the Site, as set forth in Appendix B to this Consent Decree and any modifications made in accordance with this Consent Decree.

"Section" shall mean a portion of this Consent Decree identified by a roman numeral.

"Settling Defendants" shall mean those Parties identified in Appendix D (Settling Defendants), and does not include the Settling

Federal Agencies.

"Settling Federal Agencies" shall mean the United States Air Force and the United States Navy.

"Site" shall mean the facility where disposal of Waste Material was conducted, and where Waste Materials have come to be located. The Site is located at 480 Breakfast Hill Road, in North Hampton, Rockingham County, New Hampshire and is depicted generally on the map attached as Appendix C.

"State" shall mean the State of New Hampshire.

"Supervising Contractor" shall mean the contractor retained by the Settling Defendants to carry out the Work under this Consent Decree and approved by EPA pursuant to Paragraph 10.

"United States" shall mean the United States of America, including its agencies, departments and instrumentalities, including, but not limited to, the Settling Federal Agencies.

"Waste Material" shall mean (1) any "hazardous substance" under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14); (2) any "pollutant or contaminant" under Section 101(33) of CERCLA, 42 U.S.C. § 9601(33); (3) any "hazardous waste" under section 1004(5) of RCRA, 42 U.S.C. § 6903(5); (4) any "solid waste" under Section 1004(27) of RCRA, 42 U.S.C. § 6903(27); and (5) any "hazardous material" under New Hampshire RSA 147.B:2.

"Work" shall mean all activities Settling Defendants are required to perform under this Consent Decree, including, but not limited to, Remedial Design, Remedial Action, Operation and Maintenance and any Additional Work activities, except those

required by Section XXIX (Retention of Records).

V. GENERAL PROVISIONS

5. Objectives of the Parties

The objectives of the Parties in entering into this Consent Decree are to protect public health and welfare and the environment from releases or threatened releases of Waste Material at and from the Site by the investigation, development, design and implementation of the Remedial Action and Operation & Maintenance for Operable Unit 1 at the Site by the Settling Defendants, and to reimburse Future Response Costs and certain Oversight Costs incurred by the Plaintiffs related to Operable Unit 1.

6. Commitments by Settling Defendants and Settling Federal Agencies

a. Settling Defendants shall finance and perform the Work in accordance with this Consent Decree, including, but not limited to, the SOW and all standards, specifications, and schedules set forth in or developed pursuant to this Consent Decree. Settling Defendants shall also reimburse the United States and the State for Future Response Costs and certain Oversight Costs as provided in this Consent Decree.

b. The obligations of Settling Defendants to finance and perform the Work and to pay amounts owed the United States and the State under this Consent Decree are joint and several. In the event of the insolvency or other failure of any one or more Settling Defendants to implement the requirements of this Consent

Decree, the remaining Settling Defendants shall complete all such requirements.

c. Settling Defendants shall assume any and all liability arising from or relating to their acts or omissions in the performance of the Work or their failure to perform fully or complete the requirements of this Consent Decree.

d. Subject to the availability of properly appropriated funds, and in accordance with the Anti-Deficiency Act, 31 U.S.C. § 1341, the Settling Federal Agencies shall arrange for payment to the EPA Hazardous Substances Superfund and make payment into the Coakley Landfill Superfund Site Trust Fund in accordance with this Consent Decree.

e. In order to expedite the Remedial Design at the Site and performance of certain other obligations under this Consent Decree, Settling Defendants agree to select the Supervising Contractor and the Remedial Design Contractor if not the same as the Supervising Contractor under Section VI, perform Remedial Design under Section VI, comply with Reporting Requirements as they relate to Remedial Design under Section XI, provide Site Access for Remedial Design under Section X, establish a Trust Fund account under Section XV as necessary for Remedial Design and perform any and all other obligations under this Consent Decree necessary to perform Remedial Design. These commitments are a contractual obligation effective upon the lodging of this Consent Decree with the Court. These obligations shall be enforceable as a matter of contract law regardless of

when or whether the Decree is entered by the Court. All Future Response Costs and certain Oversight Costs incurred prior to the entry of the Consent Decree shall be reimbursed after entry in accordance with Section XVIII.

7. Compliance With Applicable Law

All Work undertaken by Settling Defendants pursuant to this Consent Decree shall be performed in accordance with the requirements of all federal and state laws and regulations and all applicable or relevant and appropriate public health and environmental requirements identified in the ROD. The parties agree that the Work conducted pursuant to this Consent Decree, if approved by EPA, shall be considered to be consistent with the NCP.

8. Permits

a. As provided in Section 121(e) of CERCLA and the NCP, no permit shall be required for any portion of the Work conducted entirely on-site. On-site means a landfill area and wetlands containing contaminated sediments described in the ROD and SOW necessary for remediation under Operable Unit 1 as well as all suitable areas in very close proximity to the contamination necessary for implementation of the response action, and the Coakley property. Where any portion of the Work requires a federal or state permit or approval, Settling Defendants shall timely submit applications and take all other actions necessary to obtain all such permits or approvals.

b. If the Settling Defendants establish that they

qualify for Force Majeure relief pursuant to the standards and requirements of Paragraphs 66 through 69 of Section XXI (Force Majeure), the Settling Defendants shall be entitled to such relief as is provided pursuant to the provisions of that Section for any delay in the performance of the Work resulting from a failure to obtain, or a delay in obtaining, any permit required for the Work attributable to Force Majeure.

c. All hazardous waste, as defined under Section 1004(5) of RCRA, 42 U.S.C. § 6903(5), that Settling Defendants generate in performance of the Work shall be managed by the Settling Defendants in accordance with the NCP, including but not limited to the RCRA requirements relating to the use and signing of manifests.

d. Settling Defendants shall include in all contracts or subcontracts entered into for Work, provisions stating that such contractors or subcontractors, including their agents and employees, shall perform all activities required by such contracts or subcontracts in compliance with all applicable laws and regulations.

e. This Consent Decree is not, and shall not be construed to be, a permit issued pursuant to any federal or state statute or regulation.

9. Within 15 days after the entry of this Consent Decree, the Settling Defendant(s) shall record a notice of the existence of this Consent Decree with the Registry of Deeds, Rockingham County, State of New Hampshire with appropriate reference to the

relationship of this Consent Decree to the Coakley Landfill property. Settling Defendants shall not use any portion of the Site in any manner that EPA determines would adversely affect the integrity of any containment system, treatment system or monitoring system installed pursuant to this Consent Decree.

VI. PERFORMANCE OF THE WORK BY SETTLING DEFENDANTS

10. Selection of Remedial Design and Supervising Contractor.

a. All aspects of the Work to be performed by Settling Defendants pursuant to Sections VI (Performance of the Work by Settling Defendants), VII (Additional Work), VIII (U.S. EPA Periodic Review), and IX (Quality Assurance, Sampling and Data Analysis) of this Consent Decree shall be under the direction and supervision of the Supervising Contractor, the selection of which shall be subject to disapproval by EPA after a reasonable opportunity for review and comment by the State. Within 21 days after the lodging of this Consent Decree, Settling Defendants shall submit to EPA and the State a list, in writing, of the name, title, and qualifications of all contractor(s) from whom Settling Defendants will solicit proposals to be the Supervising Contractor and if a different person, the Remedial Design Contractor. EPA will, after reasonable opportunity for review and comment by the State, issue, in writing, a notice of the names of the contractor(s) it disapproves or an authorization to proceed.

b. If EPA disapproves of any listed contractor(s) as Supervising Contractor or Remedial Design Contractor, Settling Defendants shall either proceed with respect to the remaining

contractors or submit to EPA and the State a second list of contractors, including the qualifications of each contractor, that would be acceptable to Settling Defendants within 30 days of receipt of EPA's disapproval of the contractor(s) previously listed. EPA after reasonable opportunity for review and comment by the State, will provide written notice of the names of the contractor(s) that it disapproves and an authorization to proceed with respect to any of the other contractors. Settling Defendants shall select any approved contractor(s) from that second list and shall notify EPA and the State of the name of the contractor selected within 21 days of EPA's authorization to proceed. If at any time thereafter, Settling Defendants propose to change a Supervising Contractor or Remedial Design Contractor, Settling Defendants shall give such notice to EPA and the State and must obtain an authorization to proceed from EPA, after a reasonable opportunity for review and comment by the State, before the new Supervising Contractor or Remedial Design Contractor performs, directs, or supervises any Work under this Consent Decree. If EPA fails to provide written notice of its authorization to proceed or disapproval of the names on the list as provided in this Paragraph and this failure prevents the Settling Defendants from meeting one or more deadlines in a plan approved by the EPA pursuant to this Consent Decree, Settling Defendants may seek relief under the provisions of Section XXI (Force Majeure) hereof.

11. Remedial Design

a. Within 133 days after EPA issues the authorization to

proceed pursuant to Paragraph 10, the Settling Defendants shall submit to EPA and the State a Health and Safety Plan, including a Contingency Plan, for field design activities which conforms to the applicable Occupational Safety and Health Administration and EPA requirements including, but not limited to, 29 C.F.R. § 1910.120. Within 217 days after EPA issues the authorization to proceed, Settling Defendants shall submit to EPA and the State a Project Operation Plan, a Pre-Design Work Plan and an Environmental Monitoring Plan for the design of the Remedial Action at the Site. Within 182 days after EPA, after a reasonable opportunity for review and comment by the State, approves the Project Operation Plan, the Pre-Design Work Plan and the Environmental Monitoring Plan, the Settling Defendants shall submit to EPA and the State a Pre-Design Report. The Pre-Design Report shall include the results of the investigations set forth in the Pre-Design Work Plan. Within 42 days after the Settling Defendants receive approval of the Pre-Design Report, Settling Defendants shall submit to EPA and the State an updated Health and Safety Plan and a Remedial Design Work Plan ("Remedial Design Work Plan"). The Project Operation Plan, the Pre-Design Work Plan, the Environmental Monitoring Plan and the Remedial Design Work Plan shall provide for pre-design and design of the remedy set forth in the ROD in accordance with the SOW and, upon their approval by EPA, shall be incorporated into and become enforceable under this Consent Decree.

b. The Project Operation Plan, the Pre-Design Work Plan and the Environmental Monitoring Plan shall include plans and schedules for all pre-design tasks identified in the SOW, including, but not limited to, plans and schedules for the completion of: (1) a field sampling and analysis plan; (2) a Quality Assurance/Quality Control Plan (QA/QC) in accordance with Section IX (Quality Assurance, Sampling and Data Analysis); (3) an updated Health and Safety Plan; (4) a Project Management Plan; (5) Assessments (including consolidation of sediments, capping of landfill, active interior gas collection/recovery system, groundwater extraction system, groundwater treatment system); and (6) monitoring programs (including groundwater, air and wetlands).

c. The Remedial Design Work Plan shall include plans and schedules for implementation of all remedial design tasks identified in the SOW, including, but not limited to, plans and schedules for the completion of: (1) a Construction Quality Assurance Project Plan ("CQAPP); (2) a preliminary design submittal; (3) an intermediate design submittal; (4) a pre-final design submittal; (5) a final design submittal; and (6) a final Environmental Monitoring Plan. The CQAPP shall detail the approach to quality assurance during construction activities at the site. In addition, the Remedial Design Work Plan shall include a schedule for completion of the Remedial Action Work Plan.

d. The preliminary design submittal shall include, at a minimum, the following: (1) design criteria; (2) results of

additional field sampling; (3) project delivery strategy; (4) preliminary plans, drawings and sketches; (5) required specifications in outline form; and (6) preliminary construction schedule.

e. The intermediate design submittal shall be a continuation and expansion of the preliminary design. Any value engineering proposals must be identified and evaluated during this review.

f. The pre-final and final design submittals shall include, at a minimum, the following: (1) pre-final and final plans and specifications; (2) draft and final Operation and Maintenance Plan; and (3) preliminary and final bid documents.

g. Within seven (7) days after approval of the Remedial Design Work Plan by EPA, after a reasonable opportunity for review and comment by the State, Settling Defendants shall implement the Remedial Design Work Plan. The Settling Defendants shall submit all plans, submittals and other deliverables required under the approved Remedial Design Work Plan in accordance with the approved schedule for review and approval pursuant to Section XII (Submissions Requiring Agency Approval). Unless otherwise directed by EPA, Settling Defendants shall not commence further Remedial Design activities at the Site prior to approval of the Remedial Design Work Plan.

12. Remedial Action.

Selection of Remedial Action Contractor.

Within 21 days after Settling Defendants receive approval of

the final (100%) design, the Settling Defendants shall select a Remedial Action Contractor in the same manner set out in Paragraph 10 for Selection of Remedial Design and Supervising Contractor. If at any time thereafter, Settling Defendants propose to change a Remedial Action Contractor, Settling Defendants shall give such notice to EPA and the State and must obtain an authorization to proceed from EPA, after a reasonable opportunity for review and comment by the State, before the new Remedial Action Contractor performs, directs, or supervises any Work under this Consent Decree. If EPA fails to provide authorization to proceed or written notice of its disapproval of the names on the list as provided in this Paragraph and this failure prevents the Settling Defendants from meeting one or more deadlines in a plan approved by the EPA pursuant to this Consent Decree, Settling Defendants may seek relief under the provisions of Section XXI (Force Majeure) hereof.

13. a. Within 98 days after EPA issues the authorization to proceed pursuant to Paragraph 12, Settling Defendants shall submit to EPA and the State, a work plan for the performance of the Remedial Action at the Site ("Remedial Action Work Plan"). The Remedial Action Work Plan shall provide for construction of the remedy, in accordance with the SOW, as set forth in the design plans and specifications in the approved final design submittal. Upon its approval by EPA, the Remedial Action Work Plan shall be incorporated into and become enforceable under this Consent Decree. At the same time as they submit the Remedial Action Work

Plan, Settling Defendants shall submit to EPA and the State an updated Health and Safety Plan for field activities required by the Remedial Action Work Plan which conforms to the applicable Occupational Safety and Health Administration and EPA requirements including, but not limited to, 29 C.F.R. 1910.120.

b. The Remedial Action Work Plan shall include the following: (1) the schedule for completion of the Remedial Action; (2) schedule for developing and submitting other required Remedial Action plans; (3) a groundwater monitoring plan; (4) methods for satisfying permitting requirements; and (5) methodology for implementation of the Operation and Maintenance Plan. The Remedial Action Work Plan also shall include a schedule for implementation of all Remedial Action tasks identified in the final design submittal and shall identify the initial formulation of the Settling Defendants' Remedial Action Project Team (including, but not limited to, the Supervising Contractor).

c. Within 15 days after Settling Defendants receive notice of approval of the Remedial Action Work Plan by EPA, after a reasonable opportunity for review and comment by the State, Settling Defendants shall implement the activities required under the Remedial Action Work Plan. The Settling Defendants shall submit all plans, submittals, or other deliverables required under the approved Remedial Action Work Plan in accordance with the approved schedule for review and approval pursuant to Section XII (Submissions Requiring Agency Approval). Unless otherwise directed by EPA, Settling Defendants shall not commence physical

on-site construction activities at the Site prior to approval of the Remedial Action Work Plan.

14. The Work performed by the Settling Defendants pursuant to this Consent Decree shall, at a minimum, achieve the Performance Standards.

15. Settling Defendants acknowledge and agree that nothing in this Consent Decree, the SOW, or the Remedial Design or Remedial Action Work Plans constitutes a warranty or representation of any kind by Plaintiffs that compliance with the work requirements set forth in the SOW and the Work Plans will achieve the Performance Standards. Settling Defendants' compliance with the work requirements shall not foreclose Plaintiffs from seeking compliance with all terms and conditions of this Consent Decree, including, but not limited to, the applicable Performance Standards.

16. a. Settling Defendants shall, prior to any off-Site shipment of Waste Material from the Site to an out-of-state waste management facility, provide written notification to the appropriate state environmental official in the receiving facility's state and to the EPA RPM designated pursuant to Section XIII below of such shipment of Waste Material. However, this notification requirement shall not apply to any off-Site shipments when the total volume of all such shipments will not exceed 10 cubic yards.

b. The Settling Defendants shall include in the written notification the following information, where available: (1) the

name and location of the facility to which the Waste Material is to be shipped; (2) the type and quantity of the Waste Material to be shipped; (3) the expected schedule for the shipment of the Waste Material; and (4) the method of transportation. The Settling Defendants shall notify the state in which the planned receiving facility is located of major changes in the shipment plan, such as a decision to ship the Waste Material to another facility within the same state, or to a facility in another state.

c. The Settling Defendants shall identify the receiving facility and state following the award of the contract for Remedial Action construction. The Settling Defendants shall provide the information required by Paragraph 15.a as soon as practicable after the award of the contract and before the Waste Material is actually shipped.

VII. ADDITIONAL WORK

17. In the event that EPA determines or the Settling Defendants propose that Additional Work is necessary to meet the Performance Standards or carry out the remedy selected in the ROD, notification of such Additional Work shall be provided to the EPA Remedial Project Manager (RPM) and all Project Coordinators designated pursuant to this Consent Decree.

18. Within 45 days of receipt of written notice from EPA pursuant to Paragraph 17 that Additional Work is necessary or such longer time as may be specified by EPA, Settling Defendants shall submit to EPA and the State for approval by EPA, after reasonable opportunity for review and comment by the State, a work plan and

schedule for the Additional Work. The plan shall conform to this Consent Decree, the NCP, and Superfund Remedial Design and Remedial Action Guidance (OSWER Directive 9355.0.4A) ("RD/RA Guidance"), and subsequent amendments to such guidance upon written notice to Settling Defendants of such amendment by EPA. Amended guidance shall apply only to procedures conducted after such written notice. Upon approval of the plan pursuant to Section XII (Submissions Requiring Agency Approval), Settling Defendants shall implement the plan for Additional Work in accordance with the schedule contained therein.

19. Within 30 days of approval of a written proposal from Settling Defendants that Additional Work is necessary to meet the Performance Standards or carry out the remedy selected in the ROD, Settling Defendants shall submit to EPA and the State for approval by EPA, after reasonable opportunity for review and comment by the State, a work plan and schedule for the Additional Work. The plan shall conform to this Consent Decree, the NCP, RD/RA Guidance, and any amendments to that guidance. Amended guidance shall apply only to procedures conducted after written notice by EPA to Settling Defendants of such amendments. Upon approval of the plan pursuant to Section XII (Submissions Requiring Agency Approval), Settling Defendants shall complete the Additional Work in accordance with the schedule contained in the approved plan.

20. Settling Defendants may invoke the procedures set forth in Section XXII (Dispute Resolution) to dispute EPA's determination that Additional Work is necessary to meet the

Performance Standards or carry out the remedy selected in the ROD. Such a dispute shall be resolved pursuant to Paragraphs 70-73 of this Consent Decree.

VIII. EPA PERIODIC REVIEW

21. Settling Defendants shall conduct any Work as requested by EPA in order to permit EPA to conduct reviews at least every five years as required by Section 121(c) of CERCLA and any applicable regulations.

22. If required by Sections 113(k)(2) or 117 of CERCLA, Settling Defendants, the State and the public will be provided with an opportunity to comment on any further response actions proposed by EPA as a result of the review conducted pursuant to Section 121(c) of CERCLA and to submit written comments for the record during the public comment period. After the period for submission of written comments is closed, the Regional Administrator, EPA Region I, or his/her delegate will determine in writing whether any further response actions are appropriate.

23. If the Regional Administrator, EPA Region I, or his/her delegate determines, based on information received, in whole or in part, during the review conducted pursuant to Section 121(c) of CERCLA, or during any period for submission of written comments pursuant to Paragraph 22, that the Remedial Action is not protective of human health and the environment, the United States may institute further proceedings in this action or in a new action, or EPA may issue an administrative order, to require the Settling Defendants, or any other person, to perform such further

response actions that EPA determines are appropriate or to reimburse the United States for the costs incurred for such additional response actions.

IX. QUALITY ASSURANCE, SAMPLING, and DATA ANALYSIS

24. Settling Defendants shall use quality assurance, quality control, and chain of custody procedures throughout the performance of the Work in accordance with the SOW, EPA's "Interim Guidelines and Specifications For Preparing Quality Assurance Project Plans," December 1980, (QAMS-005/80); "Data Quality Objective Guidance," (EPA/540/G87/003 and 004); "EPA NEIC Policies and Procedures Manual," May 1978, revised November 1984, (EPA 330/9-78-001-R); and subsequent amendments to such guidelines upon written notification to Settling Defendants of such amendment by EPA. Amended guidelines shall apply only to procedures conducted after such written notification. If relevant to the proceeding, validated sampling data generated in accordance with the QA/QC and reviewed and approved by EPA shall be admissible as evidence, without objection, in any proceeding under this Decree. Settling Defendants shall assure that EPA and State personnel and their authorized representatives are allowed reasonable access to any laboratory utilized by Settling Defendants in implementing this Consent Decree. In addition, Settling Defendants shall assure that such laboratories shall analyze all samples submitted by EPA pursuant to the QA/QC for quality assurance monitoring.

25. Upon request of EPA or the State, the Settling Defendants shall allow split or duplicate samples to be taken by

EPA and the State or their authorized representatives. Settling Defendants shall notify EPA and the State not less than 14 days in advance of any sample collection activity. In addition, EPA and the State shall have the right to take any additional samples that EPA or the State deem necessary. EPA and the State will provide to Settling Defendants, after written request, access to a summary of the validated analytical results of the requested sampling, including the results of split and duplicate sampling. Upon request, EPA and the State will allow the Settling Defendants to take split or duplicate samples of any samples Plaintiffs take as part of their oversight of the Settling Defendants' implementation of the Work.

26. Within seven (7) days of receipt of a written request by EPA or the State, Settling Defendants shall submit to EPA and the State three (3) copies each of the results of all sampling and/or tests which have been subjected to QA/QC validation, regardless of the results of validation, and other data including but not limited to field screening data, groundwater treatment processes quality control data, and air monitoring data obtained or generated by or on behalf of Settling Defendants with respect to the Site and/or the implementation of this Consent Decree. Settling Defendants shall insure that all samples and/or tests are promptly analyzed and subjected to QA/QC validation.

27. Notwithstanding any provision of this Consent Decree, the United States and the State hereby retain all of their information gathering and inspection authorities and rights,

including enforcement actions related thereto, under CERCLA, RCRA and any other applicable statutes or regulations.

X. ACCESS AND INSTITUTIONAL CONTROLS

28. Commencing upon the date of lodging of this Consent Decree, the Settling Defendants agree that the United States, the State, and their representatives, including, but not limited to, EPA and its employees, agents, authorized representatives or contractors, shall have access at all reasonable times to the Site and any other property to which access is required for the implementation of this Consent Decree, to the extent access to such property is owned or controlled by Settling Defendants, for the purposes of conducting any activity related to this Consent Decree including, but not limited to:

a. Monitoring the Work and other activities taking place on such property;

b. Verifying any data or information submitted to the United States, the State, or both;

c. Conducting investigations relating to contamination at or near the Site;

d. Obtaining samples;

e. Assessing the need for, planning, or implementing Additional Work at or near the Site;

f. Inspecting and copying records, operating logs, contracts, or other documents maintained or generated by Settling Defendants or their agents or Contractors, consistent with Section XXVI (Access to Information); and

g. Assessing Settling Defendants' compliance with this Consent Decree.

29. To the extent that the Site or any other area where Work or Additional Work is to be performed under this Consent Decree or any area for which Institutional Controls are needed is owned or controlled by persons other than Settling Defendants, Settling Defendants shall use "best efforts" to secure such Institutional Controls.

30. To the extent that the Site or any other property to which access or Institutional Controls is required for the implementation of this Consent Decree is owned or controlled by persons other than Settling Defendants, Settling Defendants shall use "best efforts" to secure from such persons access for Settling Defendants, as well as for the United States, the State and their respective representatives, including but not limited to EPA, NH DES, their employees, agents, authorized representatives or contractors, as necessary to effectuate implementation of this Consent Decree. If (a) any Access required to complete the Remedial Design is not obtained within 45 days of the date of lodging of this Consent Decree, or within 45 days of the date EPA notifies the Settling Defendants in writing that additional Access beyond that previously secured is necessary, or (b) if any Access required to complete the Remedial Action is not obtained within 21 days of submission of the final 100% design in the Remedial Design Work Plan or within 45 days of the date EPA notifies the Settling Defendants in writing that additional Access beyond that

previously secured is necessary, Settling Defendants shall promptly notify the United States in writing, and shall include in that notification a summary of the steps Settling Defendants have taken to attempt to obtain Access. If Institutional Controls required to complete the Work are not obtained within 120 days of EPA approval of the 100% final design, or such later time as may be provided in the approved Remedial Design, or within 120 days of the date EPA notifies the Settling Defendants, in writing, that additional Institutional Controls beyond those previously secured are necessary, Settling Defendant shall promptly notify the United States, in writing, and shall include in that notification a summary of the steps Settling Defendants have taken to attempt to obtain imposition of Institutional Controls. The United States or the State may, as it deems appropriate, assist Settling Defendants in obtaining Access or Institutional Controls including, if necessary, taking actions to gain access pursuant to Sections 104 or 106 of CERCLA and Section 300.400(d)(3) and (4) of the NCP or any other law. Settling Defendants shall reimburse the United States or the State, in accordance with the procedures in Section XVIII (Reimbursement of Oversight and Future Response Costs), for all costs incurred by the United States or the State in obtaining Access or Institutional Controls, including, but not limited to, attorneys fees.

31. Notwithstanding any provision of this Consent Decree, the United States and the State retain all of their access authorities and rights, including enforcement authorities related

thereto, under CERCLA, RCRA and any other applicable statute or regulations.

XI. REPORTING REQUIREMENTS

32. In addition to any other requirement of this Consent Decree, Settling Defendants shall submit to EPA and the State two (2) copies each of written monthly progress reports that: (a) describe the actions which have been taken toward achieving compliance with this Consent Decree during the previous month; (b) include a summary of all results of sampling and testing that have been subjected to QA/QC validation procedures and all other data received or generated by Settling Defendants or their contractors or agents in the previous month and the status of sampling, testing, analysis and validation; (c) identify all work plans, plans and other deliverables required by this Consent Decree that were completed and submitted during the previous month; (d) describe all actions, including, but not limited to, data collection and implementation of work plans, which are scheduled for the next month and provide any other information relating to the progress of construction that is necessary to assess compliance with this Consent Decree, including, but not limited to, critical path diagrams, Gantt charts and Pert charts; (e) include information regarding percentage of completion, unresolved delays encountered or anticipated that may affect the future schedule for implementation of the Work, and a description of efforts made to mitigate those delays or anticipated delays; (f) include any modifications to the work plans or other schedules

that Settling Defendants have proposed to EPA or that have been approved by EPA; and (g) describe all activities undertaken in support of the Community Relations Plan during the previous month and those to be undertaken in the next month. Settling Defendants shall submit these progress reports to EPA and the State by the first day of every month following the lodging of this Consent Decree until EPA notifies the Settling Defendants pursuant to Paragraph 52.b of Section XVI (Certification of Completion of Work). If requested by EPA or the State, Settling Defendants shall also provide briefings for EPA and the State to discuss the progress of the Work.

33. The Settling Defendants shall notify EPA of any change in the schedule described in the monthly progress report for the performance of any activity, including, but not limited to, data collection and implementation of work plans, no later than seven (7) days prior to the performance of the activity.

34. Upon learning of the occurrence of any event during performance of the Work that Settling Defendants are required to report pursuant to Section 103 of CERCLA, 42 U.S.C § 9603, and/or Section 304 of the Emergency Planning and Community Right-to-Know Act (EPCRA), 42 U.S.C. § 11004, Settling Defendants shall, within 24 hours of the onset of such event, orally notify the EPA RPM or the EPA Geographic Section Chief designated pursuant to Section XIII (in the event of the unavailability of the EPA RPM), or, in the event that neither the EPA RPM or the EPA Geographic Section Chief is available, the Emergency Response Unit, Region I, United

States Environmental Protection Agency and the State Project Coordinator. Within 24 hours of the onset of such event, Settling Defendants shall also orally notify the State Project Coordinator. These reporting requirements are in addition to the reporting required by CERCLA Section 103 or EPCRA Section 304. Within 20 days of learning of the onset of such an event, Settling Defendants shall furnish to Plaintiffs a written report, signed by the Settling Defendant's Project Coordinator, setting forth the events which occurred and the measures taken, and to be taken, in response thereto. Within 30 days of the conclusion of such an event, Settling Defendants shall submit a report to the Plaintiffs setting forth all actions taken in response thereto. Settling Defendants shall exercise diligence to learn of such events. Failure to exercise diligence shall not excuse performance under this Section.

35. Settling Defendants shall submit 12 copies of all plans, reports, and data required by the SOW, the Remedial Design Work Plan, the Remedial Action Work Plan, or any other approved plans to EPA in accordance with the schedules set forth in such plans. Settling Defendants shall simultaneously submit two (2) copies of all such plans, reports and data to the State.

36. All reports and other documents submitted by Settling Defendants to EPA (other than the monthly progress reports referred to above) which purport to document Settling Defendants' compliance with the terms of this Consent Decree shall be signed by the Settling Defendants' Project Coordinator.

XII. SUBMISSIONS REQUIRING AGENCY APPROVAL

37. After review of any plan, report or other item which is required to be submitted for approval pursuant to this Consent Decree, EPA, after reasonable opportunity for review and comment by the State, shall, in writing, either: (a) approve, in whole or in part, the submission; (b) approve the submission upon specified conditions; (c) modify the submission to cure the deficiencies; (d) direct that the Settling Defendants modify the submission; (e) disapprove, in whole or in part, the submission, notifying Settling Defendants of deficiencies; or (f) any combination of the above.

38. In the event of approval, approval upon specified conditions, or modification by EPA, Settling Defendants shall proceed to take any action required by the plan, report, or other item, as approved or modified by EPA subject only to their right to invoke the Dispute Resolution procedures set forth in Section XXII (Dispute Resolution) with respect to the modifications or specified conditions made by EPA.

39. Upon receipt of a written notice of disapproval or a written notice requiring a modification, Settling Defendants shall, within 21 days thereafter, or such other time as circumstances require as determined and specified by EPA in such written notice, correct the deficiencies and resubmit the plan, report, or other item for approval. Notwithstanding the written notice of disapproval or a written notice requiring a modification, Settling Defendants shall proceed, at the direction

of EPA, to take any action required by any non-deficient portion of the submission, in accordance with the schedules established by EPA.

40. In the event that a resubmitted plan, report or other item, or portion thereof, is disapproved by EPA, EPA may again require the Settling Defendants to correct the deficiencies, in accordance with the preceding Paragraphs. EPA also retains the right to amend or develop the plan, report or other item. Subject only to their right to invoke procedures set forth in Section XXII (Dispute Resolution), Settling Defendants shall implement any such plan, report, or item as amended or developed by EPA.

41. If, upon the first resubmission or upon any subsequent resubmission, the plan, report, or item is disapproved by EPA due to a material defect, Settling Defendants shall be deemed to be in violation, as of the date the submittal was originally due, of the provision of this Consent Decree requiring the Settling Defendants to submit such plan, report, or item unless the Settling Defendants invoke the dispute resolution procedures set forth in Section XXII (Dispute Resolution) and this Court overturns EPA's disapproval pursuant to that Section. The provisions of Section XXII (Dispute Resolution) and Section XXIII (Stipulated Penalties) shall govern the implementation of the Work and accrual and payment of any stipulated penalties during Dispute Resolution. Implementation of any non-deficient portion of a submission shall not relieve Settling Defendants of any liability for stipulated penalties under Section XXIII (Stipulated Penalties).

42. All plans, reports, and other items required to be submitted to EPA under this Consent Decree shall, upon approval by EPA, be deemed to be incorporated in and an enforceable part of this Consent Decree. In the event EPA approves a portion of a plan, report, or other item required to be submitted to EPA under this Consent Decree, the approved portion shall be deemed to be incorporated in and an enforceable part of this Consent Decree.

XIII. REMEDIAL PROJECT MANAGER/PROJECT COORDINATORS

43. Within 21 days of lodging this Consent Decree, Settling Defendants shall notify EPA and the State, in writing, of the name, address and telephone number of their designated Project Coordinator and Alternate Project Coordinator. The Settling Defendants' Project Coordinator shall be subject to approval by EPA and shall have the technical expertise sufficient to adequately oversee all aspects of the Work. The Settling Defendants' Project Coordinator shall not be acting as an attorney for any of the Settling Defendants in this matter. He or she may assign other representatives, including other contractors, to serve as a Site representative for oversight of performance of daily operations during remedial activities. Within 21 days of the date of the lodging of this Consent Decree, EPA will designate, in writing, a Remedial Project Manager for administration of its responsibilities, for oversight of the day-to-day activities conducted under the Consent Decree, and for receipt of all written matter required by this Consent Decree. In addition, EPA will designate, in writing, a Geographic Section

Chief who shall be responsible for all the findings of approval/disapproval, and comments on all major project deliverables. Within 21 days of the date of the lodging of this Consent Decree, the State will designate, in writing, a Project Coordinator for administration of its responsibilities for the State's oversight of activities conducted under the Consent Decree, and for receipt of all written matter required by this Consent Decree. If any Party decides to change its designated Project Coordinator, RPM, or Geographic Section Chief, the name, address and telephone number of the successor will be given to the other parties within 5 working days before the change(s) become effective, unless impracticable, but in no event later than the actual day the change is made.

44.a. Plaintiffs may designate other representatives, including, but not limited to, EPA and State employees, and federal and State contractors and consultants, to observe and monitor the progress of any activity undertaken pursuant to this Consent Decree. EPA's RPM shall have the authority lawfully vested in a Remedial Project Manager (RPM) and On-scene Coordinator (OSC) by the National Contingency Plan, 40 C.F.R. Part 300. In addition, EPA's RPM shall have authority, consistent with the National Contingency Plan, to halt, conduct or direct any Work required by this Consent Decree, and to take any necessary response action when s/he determines that conditions at the Site constitute an emergency situation or may present a threat to public health or welfare or the environment due to release or

threatened release of Waste Material.

b. EPA's RPM, and the Settling Defendants' Project Coordinator will meet on a weekly basis unless EPA's RPM decides that such a meeting is not necessary. The State's Project Coordinator shall also be provided an opportunity to attend such meetings.

XIV. ASSURANCE OF ABILITY TO COMPLETE WORK

45. Within 30 days of lodging of this Consent Decree, Settling Defendants shall demonstrate their ability to complete the Work and to pay all claims that arise from the performance of the Work by obtaining and maintaining financial security, equalling the total estimated cost of the Work, in one of the following forms:

(a) A surety bond guaranteeing performance of the Work;

(b) One or more letters of credit;

(c) A guarantee to perform the Work by one or more parent corporations, sibling corporations, or subsidiaries, or by one or more unrelated corporations that have a substantial business relationship with at least one of the Settling Defendants; or

(d) A demonstration that the Settling Defendants satisfy the requirements of 40 C.F.R. Part 264.143(f).

(e) Internal financial information regarding Settling Defendants' net worth, cash flow, total liabilities, and current rating for most recent bond issuances sufficient to demonstrate to EPA's satisfaction that one or more Settling Defendants have the financial ability to complete the Work. Settling Defendants that

are publicly traded corporations shall each submit both the most recent 10-K Annual Report submitted to the Securities and Exchange Commission and the most recent certified public accountant's report of a Settling Defendant's financial statements for the latest completed fiscal year if not included therein. Settling Defendants which are subsidiaries of publicly traded corporations shall each submit the most recent 10-K Annual Report for the parent company, and, if they exist, the most recent certified public accountant's report for the subsidiary and the most recent consolidated report prepared on behalf of the parent corporation which includes the subsidiary. Information submitted pursuant to this Subparagraph shall be considered adequate demonstration of financial ability to complete the Work where such information, in EPA's view, subject to Section XXII (Dispute Resolution), indicates that one or more Settling Defendants meet the requirements of 40 C.F.R. § 264.143(f)(1)(i) or (ii), substituting the term "estimated cost of remaining Work less amounts remaining in the Trust Fund" for all references in Sections 264.143(f)(1)(i) and (ii) (B) and (D) to "the sum of the current closure and post-closure cost estimates and the current plugging and abandonment cost estimates". If necessary to establish that at least one of the Settling Defendants meets the standards in the previous sentence, Settling Defendants shall submit additional financial information as specified by EPA. Settling Defendants that are municipalities shall, in addition to providing the current rating for most recent bond issuances, annual budgets and annual

financial reports, obtain authorization for the amount necessary to meet their financial obligations to perform the Work pursuant to this Consent Decree from the municipal legislative body in accordance with the following schedule:

1. The City of Portsmouth City Council shall, after duly advertised notice, conduct a public hearing for the purpose of authorizing the execution of this Consent Decree and the City's financial obligations necessary to perform the Work pursuant to this Consent Decree no later than November 18, 1991.

2. The Towns of Newington and North Hampton shall each conduct a special town meeting in accordance with the procedures established by law, for the purpose of authorizing the execution of this Consent Decree and their financial obligations necessary to perform the Work pursuant to this Consent Decree no later than January 30, 1992.

46. If the Settling Defendants seek to demonstrate the ability to complete the Work through a guarantee by a third party pursuant to Paragraph 45(c) of this Consent Decree, Settling Defendants shall demonstrate that the guarantor satisfies the requirements of 40 C.F.R. Part 264.143(f). If Settling Defendants seek to demonstrate their ability to complete the Work pursuant to Paragraph 45 (c-e), they shall resubmit the information and statements required under those Subparagraphs annually, on the anniversary of the lodging date of this Consent Decree. In the event that EPA, after a reasonable opportunity for review and comment by the State, determines at any time that the financial

assurances provided pursuant to this Paragraph are inadequate, Settling Defendants shall, within 30 days of receipt of written notice of EPA's determination, obtain and present to EPA for approval, after a reasonable opportunity for review and comment by the State, one of the other forms of financial assurance listed in Paragraph 45 of this Consent Decree. Settling Defendants' inability to demonstrate financial ability to complete the Work and pay all claims that arise from the performance of the Work shall not excuse performance of any activities required under this Consent Decree.

XV. TRUST FUND

47. Within ten (10) days of the lodging of this Consent Decree, Settling Defendants shall present to EPA for approval, with a copy to the State, a fully executed trust agreement (the "Trust Agreement") establishing the Coakley Landfill Superfund Site Trust Fund (the "Trust Fund") and shall notify EPA and the State of the identity and qualifications of the trustee(s). The Trust Agreement shall confer upon the Trustee(s) all powers and authorities necessary to finance the obligations of the Settling Defendants under this Consent Decree. Money paid into the Trust Fund by Settling Defendants and Settling Federal Agencies shall be used solely to pay proper and necessary expenses pursuant to this Consent Decree, including expenses of administering the Trust and the refund provided for in Paragraph 62. The Trust Fund may not be used to pay stipulated penalties that may be required to be paid pursuant to Section XXIII and shall not be used to pay

attorneys' fees or other litigation costs of the Settling Defendants.

48. Notwithstanding anything in the Trust Agreement, Settling Defendants shall be jointly and severally liable for compliance with this Consent Decree. Settling Defendants shall provide EPA and the State with written notice at least ten (10) days in advance of any proposed change in the Trust Agreement or of the Trustee(s). EPA, through its approval of the terms and conditions of the Trust Agreement or otherwise, does not guarantee the monetary sufficiency of the Trust Fund nor the legal sufficiency of the Trust Agreement.

49. The Trust Agreement shall provide that the Trustee(s) shall, within sixty (60) days of his or her appointment and every ninety (90) days thereafter, submit to Settling Defendants, EPA, and the State financial reports that include the amount of money currently in the Trust Fund and cash flow projections showing the level of funds that will be necessary to pay for the obligations of Settling Defendants under this Consent Decree for the next one hundred eighty (180) days. If the amount of money in the Trust Fund is less than the amount projected in the Trustee's report to be needed for the next one hundred eighty (180) days, Settling Defendants shall, within thirty (30) days of issuance of the Trustee's report, deposit into the Trust Fund amounts sufficient to bring the level of the Trust Fund up to that projected amount. Settling Defendants shall in any event make payments to the Trust Fund when and to the extent necessary to ensure the uninterrupted

progress and timely completion of the Work and timely payment of the refund provided in Paragraph 62 if required. Any money remaining in the Trust Fund upon certification by EPA that all of the Work has been satisfactorily completed and all Response Costs reimbursed shall be returned to Settling Defendants in accordance with the terms of the Trust Agreement.

50. If any Settling Defendant fails to pay within 30 days into the Trust Fund the additional amounts required under Paragraph 49, the other remaining Settling Defendants shall pay their proportionate share of the unpaid amount within thirty (30) days thereafter. The failure of any Settling Defendant to pay for its share of the proper and necessary expenses of this Consent Decree, shall not excuse timely completion of any obligation under this Decree.

XVI. CERTIFICATION OF COMPLETION OF WORK

51. Completion of the Remedial Action

a. Within 90 days after Settling Defendants conclude that the Remedial Action has been fully performed and the Performance Standards have been attained, Settling Defendants shall so certify to the United States and the State and shall schedule and conduct a pre-certification inspection to be attended by Settling Defendants, EPA and the State. If, after the pre-certification inspection, the Settling Defendants still believe that the Remedial Action has been fully performed and the Performance Standards have been attained, they shall submit a written report to EPA for approval pursuant to Section XII

(Submissions Requiring Agency Approval) within 30 days of the inspection. In the report, a registered professional engineer and the Settling Defendants' Project Coordinator shall certify that the Remedial Action has been completed in full satisfaction of the requirements of this Consent Decree. The written report shall include as-built drawings signed and stamped by a professional engineer. The report shall contain the following statement, signed by a responsible corporate official of a Settling Defendant or the Settling Defendants' Project Coordinator:

> "I certify that this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the material submitted. Based upon my inquiry of the person or persons directly responsible for gathering the information, the information contained in or accompanying this submission is to the best of my knowledge and belief, after thorough investigation, true, accurate and complete."

If, after completion of the pre-certification inspection and receipt and review of the written report, EPA, after reasonable opportunity to review and comment by the State, determines that the Remedial Action or any portion thereof has not been completed in accordance with this Consent Decree or that the Performance Standards have not been achieved, EPA will notify Settling Defendants in writing of the activities that must be undertaken to complete the Remedial Action and achieve the Performance Standards. EPA will set forth in the notice a schedule for performance of such activities consistent with the Consent Decree and the SOW or require the Settling Defendants to submit a schedule to EPA for approval pursuant to Section XII (Submissions Requiring Agency Approval). Settling Defendants shall perform all

activities described in the notice in accordance with the specifications and schedules established pursuant to this Paragraph, subject to their right to invoke the dispute resolution procedures set forth in Section XXII (Dispute Resolution).

b. If EPA concludes, based on the initial or any subsequent Certification of Completion of Remedial Action by Settling Defendants and after a reasonable opportunity for review and comment by the State, that the Remedial Action has been fully performed in accordance with this Consent Decree and that the Performance Standards have been achieved, EPA will so certify in writing to Settling Defendants. This certification shall constitute the Certification of Completion of the Remedial Action for purposes of this Consent Decree, including, but not limited to, Section XXIV (Covenants Not to Sue by Plaintiffs). Certification of Completion of the Remedial Action shall not affect Settling Defendants' obligations under this Consent Decree that continue beyond the Certification of Completion of Remedial Action, including, but not limited to, access, institutional controls, operation and maintenance, record retention, indemnification, insurance, and payment of Future Response Costs and penalties.

52. Completion of the Work

a. Within 90 days after Settling Defendants conclude that all phases of the Work (including O & M), have been fully performed, Settling Defendants shall so certify to the United States and the State and shall conduct a pre-certification

inspection to be attended by Settling Defendants, or their representative(s), EPA and the State. Such inspection shall be followed within 30 days by submitting a written report signed by a registered professional engineer and the Settling Defendants' Project Coordinator certifying that all phases of the Work have been completed in full satisfaction of the requirements of this Consent Decree. The report shall contain the following statement:

> "I certify that this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the material submitted. Based upon my inquiry of the person or persons directly responsible for gathering the information, the information contained in or accompanying this submission is to the best of my knowledge and belief, after thorough investigation, true, accurate and complete."

If, after review of the written report, EPA, after reasonable opportunity to review and comment by the State, determines that any portion of the Work has not been completed in accordance with this Consent Decree, EPA will notify Settling Defendants in writing of the activities that must be undertaken to complete the Work, and will set forth in the notice a schedule for performance of such activities consistent with the Consent Decree or require the Settling Defendants to submit a schedule to EPA for approval pursuant to Section XII (Submissions Requiring Agency Approval). Settling Defendants shall perform all activities described in the notice in accordance with the specifications and schedules established therein, subject to their right to invoke the dispute resolution procedures set forth in Section XXII (Dispute Resolution).

b. If EPA concludes, based on the initial or any

subsequent Certification of Completion of Work by Settling Defendants and after a reasonable opportunity for review and comment by the State, that the Work has been fully performed in accordance with this Consent Decree, EPA will so certify this to the Settling Defendants in writing. This certification shall constitute the "Certification of Completion of the Work" for purposes of this Consent Decree including, but not limited to, Section XXIV (Covenants Not to Sue by Plaintiffs).

XVII. ENDANGERMENT AND FUTURE EMERGENCY RESPONSE

53. In the event of any action or occurrence during the performance of the Work which causes or threatens a release of Waste Material that constitutes an emergency situation or may present an immediate threat to public health or the environment, Settling Defendants shall, subject to Paragraph 54, immediately take all appropriate action to prevent, abate, or minimize the release or threat of release that caused the emergency situation or immediate threat, and shall immediately notify the EPA's RPM and, if the RPM is unavailable, EPA's Geographic Section Chief. If neither of these persons is available, the Settling Defendants shall immediately notify the EPA Emergency Response Unit, Region 1. In addition, the Settling Defendants shall immediately notify the State's Project Coordinator. Within 5 days after the notification, the Settling Defendants shall provide to EPA's RPM and the State's Project Coordinator notice in writing of the action(s) taken to prevent, abate or minimize the release or threat of release. Settling Defendants shall take such actions in

consultation with EPA's RPM in accordance with all applicable provisions of the Health and Safety Plans, the Contingency Plans, and any other applicable plans or documents developed pursuant to the SOW and approved by EPA. In the event that Settling Defendants fail to take appropriate response action as required by this Section, and EPA or, as appropriate, the State take such action instead, Settling Defendants shall reimburse EPA and the State all costs of the response action not inconsistent with the NCP pursuant to Section XVIII (Reimbursement of Oversight and Future Response Costs). Payment shall be made within 30 days of Settling Defendants receipt of a bill requiring payment. Nothing in this Paragraph shall require Settling Defendants to undertake Additional Work as set forth in Section VII (Additional Work) of this Consent Decree.

54. Nothing in the preceding Paragraph or in this Consent Decree shall be deemed to limit any authority of the United States or the State to take, direct, or order all appropriate action or to seek an order from the Court to protect human health and the environment or to prevent, abate, respond to, or minimize an actual or threatened release of Waste Material on, at, or from the Site.

XVIII. REIMBURSEMENT OF OVERSIGHT AND FUTURE RESPONSE COSTS

55. Settling Defendants shall jointly and severally reimburse the United States for its Oversight Costs up to $450,000, and the State for its Oversight Costs, in a lump sum payment to the State Hazardous Waste Fund in the amount of $100,000. Payment to the

State for Oversight Costs shall be made within thirty days of the date of entry of the Consent Decree, and any late payment to the State for Oversight Costs shall include ten (10%) percent interest. Settling Defendants shall also jointly and severally reimburse the United States and the State for all Future Response Costs not inconsistent with the National Contingency Plan incurred by the United States and the State. On an annual basis beginning with the anniversary of the lodging of this Consent Decree, the United States, as to Oversight and Future Response Costs, and the State, as to Future Response Costs, will each send Settling Defendants a bill requiring payment that includes a line item summary of costs in dollars by category of costs (including, without limitation, payroll, travel, and contracts) and a brief narrative (which will generally be one to two paragraphs) summarizing the work performed during this billing period. Settling Defendants shall make all payments within 30 days of Settling Defendants' receipt of each bill requiring payment, except as otherwise provided in Paragraph 56. The Settling Defendants shall make all payments required by this Paragraph in the manner described below:

a. To the United States in the form of a certified check or checks made payable to "EPA Hazardous Substances Superfund," and referencing the site name, CERCLA Number NHD064424153 and DOJ Case Number 90-11-2-678 in reimbursement of Oversight or Future Response Costs. The Settling Defendants shall forward the certified check(s) to

EPA Region I
Attn: Superfund Accounting
P.O. Box 360197M
Pittsburgh, PA 15251

and shall send copies of the check and the transmittal letter to the United States as specified in Section XXX (Notices and Submissions) and to

Regional Hearing Clerk
U.S. EPA, Region I
JFK Federal Building, RCG
Boston, MA 02203.

b. To the State in the form of a certified check or checks made payable to Treasurer, State of New Hampshire, in reimbursement of Oversight or Future Response Costs incurred by the State. The Settling Defendants shall send the certified check(s) to Charles Holtman, Assistant Attorney General, Environmental Protection Bureau, State House Annex, 25 Capitol Street, Concord, New Hampshire 03301-6397.

56. Settling Defendants may contest payment of any Oversight and Future Response Costs under Paragraph 55 if they determine that the United States or the State has made an accounting error or if they allege that a cost item that is included represents costs that are inconsistent with the NCP. Such objection shall be made in writing within 30 days of receipt of the bill and must be sent to the United States and the State (if the State's accounting is being disputed) pursuant to Section XXX (Notices and Submissions). Any such objection shall specifically identify the contested Oversight or Future Response Costs and the basis for the objection. In the event of an objection, the Settling Defendants

shall within the 30 day period pay all uncontested Oversight or Future Response Costs to the United States or the State in the manner described in Paragraph 55. Simultaneously, the Settling Defendants shall establish an interest bearing escrow account in a bank duly chartered in the State of New Hampshire and remit to that escrow account funds equivalent to the amount of the contested Oversight or Future Response Costs. The Settling Defendants shall send to the United States, as provided in Section XXX (Notices and Submissions), and the State a copy of the transmittal letter and check paying the uncontested Oversight or Future Response Costs, and a copy of the correspondence that establishes and funds the escrow account, including, but not limited to, information containing the identity of the bank and bank account under which the escrow account is established as well as a bank statement showing the initial balance of the escrow account. Simultaneously with establishment of the escrow account, the Settling Defendants shall initiate the Dispute Resolution procedures in Section XXII (Dispute Resolution). If the United States or the State prevails in the dispute, within 14 days of the resolution of the dispute, the Settling Defendants shall direct the escrow holder to remit the escrowed monies (with accrued interest) to the United States or the State, if State costs are disputed, in the manner described in Paragraph 55. If the Settling Defendants prevail concerning any aspect of the contested costs, the Settling Defendants shall direct the escrow holder to remit payment for that portion of the costs (plus associated

accrued interest) for which they did not prevail to the United States or the State, if State costs are disputed in the manner described in Paragraph 55; Settling Defendants shall be disbursed of the balance of the escrow account. The dispute resolution procedures set forth in this Paragraph in conjunction with the procedures set forth in Section XXII (Dispute Resolution) shall be the exclusive mechanisms for resolving disputes regarding the Settling Defendants' obligation to reimburse the United States for its Oversight and Future Response Costs, and the State for its Future Response Costs.

57. In the event that the payments required by Paragraph 55 are not made within 30 days of the Settling Defendants' receipt of the bill, Settling Defendants shall pay interest on the unpaid balance at the rate established pursuant to Section 107(a) of CERCLA, 42 U.S.C. § 9607(a). The interest on Oversight and Future Response Costs shall begin to accrue 30 days after the Settling Defendants' receipt of the bill accompanied by the documents identified in Paragraph 55 of this Section. Payments made under this Paragraph shall be in addition to such other remedies or sanctions available to Plaintiffs by virtue of Settling Defendants' failure to make timely payments under this Section.

XIX. SETTLING FEDERAL AGENCIES

58. Within 60 days after entry of this Consent Decree, the United States shall pay into the Coakley Landfill Superfund Site Trust Fund, on behalf of the Settling Federal Agencies, a lump-sum payment of five million two hundred fifty thousand dollars

($5,250,000.00) as their share of costs to be incurred in carrying out response actions for Operable Unit 1. The United States Department of Justice will make best efforts to obtain the payment of this amount within 30 days of the entry of the Consent Decree.

59. Within a reasonable time after entry of this Consent Decree, the United States shall arrange for deposit into the EPA Hazardous Substances Superfund, on behalf of the Settling Federal Agencies, a lump-sum of fifty thousand dollars ($50,000.00) for EPA Oversight Costs.

60. a. Payment to the Trust Fund by the Settling Federal Agencies shall be in the form of a check made payable to the Coakley Landfill Superfund Site Trust Fund. Settling Federal Agencies shall forward a copy of the check and transmittal letter, referencing the site name, CERCLA Number NHD064424153 and DOJ Case Number 90-11-2-678, to the United States as specified in Section XXX (Notices and Submissions) and to

Regional Hearing Clerk
U.S. EPA, Region I
JFK Federal Building, RCG
Boston, MA 02203.

b. Settling Federal Agencies shall forward a copy of the documentation for the deposit into the EPA Hazardous Substances Superfund, referencing the site name, CERCLA Number NHD064424153 and DOJ Case Number 90-11-2-678, to the United States as specified in Section XXX (Notices and Submissions) and to

Regional Hearing Clerk
U.S. EPA, Region I
JFK Federal Building, RCG
Boston, MA 02203.

c. Payments by the United States on behalf of Settling Federal Agencies are subject to the availability of appropriated funds. No provision of this Consent Decree shall be interpreted as or constitute a commitment or requirement that the Settling Federal Agencies obligate or pay funds in contravention of the Anti-Deficiency Act, 31 U.S.C. § 1341.

61. The lump-sum payments referenced in Paragraphs 58 and 59 shall be in full and complete settlement of any and all liability the United States may have to the Settling Defendants in connection with the costs of performing the Work, together with any other response costs and any related or additional expenses associated with response action for Operable Unit 1, including, but not limited to: Past Response Costs; Future Response Costs; Oversight Costs; costs of Additional Work undertaken pursuant to Section VII; costs of further response actions undertaken pursuant to Section VIII; costs of emergency response undertaken pursuant to Section XVII; costs of providing indemnification in accordance with Paragraphs 63 and 64; costs of maintaining insurance required pursuant to Paragraph 65; and costs of response or reimbursement thereof incurred pursuant to the reservations contained in Paragraphs 87 and 88.

62. If the Settling Defendants certify completion of remedial action in accordance with Paragraph 51.a., and if EPA so certifies pursuant to Paragraph 51.b., without the Settling Defendants having commenced operation of a groundwater treatment system, the Settling Defendants shall refund two million seven

hundred fifty thousand dollars ($2,750,000.00) from the Coakley Landfill Superfund Site Trust Fund to the United States, together with interest calculated at the rates established pursuant to Section 107(a) of CERCLA, 42 U.S.C. § 9607(a), and compounded annually.

a. The Settling Defendant shall make payment under this Paragraph not later than 60 days after EPA certification pursuant to Paragraph 51.b., or at such earlier time as the Settling Defendants and the Settling Federal Agencies mutually agree, by check payable to "Treasurer, United States of America"; referencing the site name, CERCLA Number NHD064424153 and Department of Justice Case Number 90-11-2-678; and delivered to the offices of the Air Force project coordinator specified in Paragraph 107.

b. Interest on any refund pursuant to this Paragraph shall be paid from the date of EPA approval of the final (100%) design referenced in Paragraph 12 of the Consent Decree or three (3) years from the date of payment into the Trust Fund by the United States in accordance with Paragraph 58, whichever comes earlier, to and including the date of refund in accordance with this Paragraph. The dates of payment and refund pursuant to this Paragraph shall be measured from the date properly appearing on the face of the instrument by which payment is made.

c. For purposes of this Paragraph, "groundwater treatment system" means the system described in subpart E of Appendix B, or any comparable system designed to remove contaminants from

groundwater. Neither containment nor natural attenuation of pollutants is a groundwater treatment system.

d. Nothing in this Paragraph shall relieve the Settling Defendants of their respective obligations to properly fund the Trust Fund in accordance with Paragraphs 49 and 50.

e. If and only if (a) Settling Defendants do not commence operation of a groundwater treatment system by the time EPA makes the certification provided for in Paragraph 51.b. but (b) do commence either (1) actual physical construction of a groundwater treatment system or (2) actual physical construction of a containment system specifically required by EPA in lieu of a groundwater treatment system, the two million seven hundred fifty thousand dollar ($2,750,000) refund provided for in this Paragraph shall be reduced by twelve percent (12%) of (a) the amount expended by the Settling Defendants from the Trust Fund on actual physical construction of a groundwater treatment system or (b) the amount expended by the Settling Defendants from the Trust Fund on actual physical construction of a containment system specifically required by EPA in lieu of a groundwater treatment system. Neither the aforesaid amount expended on construction of a groundwater treatment system nor the aforesaid amount expended on construction of a containment system shall include stipulated penalties, attorneys' fees, costs of administering the Trust Fund, costs of remedial design, costs of groundwater monitoring, costs for capping the landfill, costs for wetlands sediments consolidation, costs of the landfill gas collection and treatment

system, costs of air monitoring, and/or any other costs that were not incurred for actual physical construction of the groundwater treatment system or the containment system. This reduction to the refund provision shall not be operative unless Settling Defendants keep, and provide to the United States no later than thirty (30) days after the certification provided for in Paragraph 51.b., clear documentation that identifies the monies expended on actual physical construction of the groundwater treatment system or actual physical construction of the containment system specifically required by EPA in lieu of a groundwater treatment system. If the $2,750,000 refund is reduced as set forth in this Subparagraph, interest on the refund as provided for in this Paragraph shall apply only to $2,750,000 minus the reduction, if any, set forth in this Subparagraph.

XX. INDEMNIFICATION AND INSURANCE

63. The United States and the State do not assume any liability by entering into this agreement or by virtue of any designation of Settling Defendants as EPA's authorized representatives under Section 104(e) of CERCLA. Settling Defendants shall indemnify, save and hold harmless the United States, the State, and their officials, agents, employees, contractors, subcontractors, or representatives for or from any and all claims or causes of action arising from, or on account of, acts or omissions of Settling Defendants, their officers, directors, employees, agents, contractors, subcontractors, and any persons acting on their behalf or under their control, in carrying

out activities pursuant to this Consent Decree, including, but not limited to, any claims arising from any designation of Settling Defendants as EPA's authorized representatives under Section 104(e) of CERCLA. Further, the Settling Defendants agree to pay the United States and the State all costs they incur including, but not limited to, attorneys fees and other expenses of litigation and settlement arising from, or on account of, claims made against the United States and the State based on acts or omissions of Settling Defendants, their officers, directors, employees, agents, contractors, subcontractors, and any persons acting on their behalf or under their control, in carrying out activities pursuant to this Consent Decree. Neither the United States nor the State shall be held out as a party to any contract entered into by or on behalf of Settling Defendants in carrying out activities pursuant to this Consent Decree. Neither the Settling Defendants nor any such contractor shall be considered an agent of the United States or the State.

64. Settling Defendants waive all claims against the United States and the State and their officials, agents, employees, contractors, subcontractors and representatives for damages or reimbursement or for set-off of any payments made or to be made to the United States or the State, arising from or on account of any contract, agreement, or arrangement between any one or more of the Settling Defendants and any person for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays. In addition, Settling Defendants

shall indemnify and hold harmless the United States and the State with respect to any and all claims for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between any one or more of the Settling Defendants and any person for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays.

65. a. At least 5 days prior to commencing any on-site Work, Settling Defendants shall secure, and shall maintain for the duration of this Consent Decree, comprehensive general liability insurance with limits of $5 million, combined single limit, and automobile insurance with limits of $2 million dollars, combined single limit naming as insured the United States and the State. In addition, for the duration of this Consent Decree, Settling Defendants shall satisfy, or shall ensure that their contractors or subcontractors satisfy, all applicable laws and regulations regarding the provision of worker's compensation insurance for all persons performing the Work on behalf of Settling Defendants in furtherance of this Consent Decree. At least 5 days prior to commencement of the on-Site Work under this Consent Decree, Settling Defendants shall provide to EPA and the State certificates of such insurance and a copy of each insurance policy. Settling Defendants shall resubmit such certificates and copies of policies each year on the anniversary of the effective date of this Consent Decree. If Settling Defendants demonstrate by evidence satisfactory to EPA and the State that any contractor

or subcontractor maintains insurance equivalent to that described above, or insurance covering the same risks but in a lesser amount, then, with respect to that contractor or subcontractor, Settling Defendants need provide only that portion of the insurance described above which is not maintained by the contractor or subcontractor.

b. In the event that Settling Defendants or their contractors or subcontractors are unable, through their best efforts, to obtain some or all of the Comprehensive General Liability Insurance specified in Paragraph 65.a. of this Section because such insurance is not commercially available, they shall send EPA written notice of their inability to obtain the required insurance. The notice shall identify which kinds of insurance are commercially unavailable and shall describe Settling Defendants' efforts to obtain such insurance. If EPA determines in its sole discretion that Settling Defendants did not exercise best efforts to obtain such insurance, Settling Defendants shall be in violation of this Consent Decree. If EPA determines that Settling Defendants did exercise best efforts to obtain the required coverage and that such coverage was not commercially available, EPA and Settling Defendants may mutually agree on reasonable alternative coverage including self-insurance.

XXI. FORCE MAJEURE

66. "Force Majeure," for purposes of this Consent Decree, is defined as any event arising from causes beyond the control of the Settling Defendants or of any entity controlled by Settling

Defendants, including, but not limited to, their contractors and subcontractors, that delays or prevents the performance of any obligation under this Consent Decree despite Settling Defendants' best efforts to fulfill the obligation. The requirement that the Settling Defendants exercise "best efforts to fulfill the obligation" includes using best efforts to anticipate any potential force majeure event and best efforts to address the effects of any potential force majeure event (1) as it is occurring and (2) following the potential force majeure event, such that the delay is minimized to the greatest extent possible. "Force Majeure" does not include financial inability to complete the Work or a failure to attain the Performance Standards.

67. If any event occurs or has occurred that may delay or prevent the performance of any obligation under this Consent Decree, whether or not caused by a force majeure event, the Settling Defendants shall notify orally in person or by telephone EPA's RPM or, in his or her absence, EPA's Geographic Section Chief or, in the event both of EPA's designated representatives are unavailable, the Director of the Hazardous Waste Management Division, EPA Region I, within 48 hours of when Settling Defendants first knew or should have known that the event might cause a delay. Within 5 days thereafter, Settling Defendants shall provide in writing to EPA and the State the following: an explanation of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken by Settling Defendants to prevent or minimize the delay; a schedule for

implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; the Settling Defendants' rationale for attributing such delay to a force majeure event if they intend to assert such a claim; and a statement as to whether, in the opinion of the Settling Defendants, such event may cause or contribute to an endangerment to public health, welfare or the environment. The Settling Defendants shall include with any notice all available documentation supporting their claim that the delay was attributable to a force majeure event. Failure to comply with the above requirements shall preclude Settling Defendants from asserting any claim of force majeure for that event. Settling Defendants shall be deemed to have notice of any circumstance of which their contractors or subcontractors had or should have had notice.

68. If EPA, after a reasonable opportunity for review and comment by the State, agrees that the delay or anticipated delay is or was caused by a force majeure event, the time for performance of the obligations under this Consent Decree that are affected by the force majeure event will be extended by EPA, after a reasonable opportunity for review and comment by the State, for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the force majeure event shall not, of itself, extend the time for performance of any subsequent obligation. If EPA, after a reasonable opportunity for review and comment by the State, does not agree that the delay or anticipated delay has been or will be

caused by a force majeure event, EPA will notify the Settling Defendants in writing of its decision. If EPA, after a reasonable opportunity for review and comment by the State, agrees that the delay is attributable to a force majeure event, EPA will notify the Settling Defendants of the length of the extension, if any, for performance of the obligations affected by the force majeure event.

69. If the Settling Defendants elect to invoke the dispute resolution procedures set forth in Section XXII (Dispute Resolution), they shall do so no later than 15 days after receipt of EPA's notice. In any such proceeding, Settling Defendants shall have the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a force majeure event, that the duration of the delay or the extension sought was or will be warranted under the circumstances, that best efforts were exercised to avoid and mitigate the effects of the delay, and that Settling Defendants complied with the requirements of Paragraphs 66 and 67 above. If Settling Defendants carry this burden, the delay at issue shall be deemed not to be a violation by Settling Defendants of the affected obligation of this Consent Decree identified to EPA and the Court.

XXII. DISPUTE RESOLUTION

70. Unless otherwise expressly provided for in this Consent Decree, the dispute resolution procedures of this Section shall be the exclusive mechanism to resolve disputes between the

United States, except Settling Federal Agencies, and Settling Defendants arising under or with respect to this Consent Decree and shall apply to all provisions of this Consent Decree. However, the procedures set forth in this Section shall not apply to actions by the United States to enforce obligations of the Settling Defendants that have not been disputed in accordance with this Section.

71. Any dispute which arises under or with respect to this Consent Decree shall in the first instance be the subject of informal negotiations between the parties to the dispute. The period for informal negotiations shall not exceed 20 days from the time the dispute arises, unless it is modified by agreement of the parties to the dispute. The dispute shall be considered to have arisen when one party notifies the other parties in writing that there is a dispute.

72. In the event that the parties cannot resolve a dispute by informal negotiations under the preceding Paragraph, then the position advanced by EPA shall be considered binding unless, within 10 days after the conclusion of the informal negotiation period, Settling Defendants invoke the formal dispute resolution procedures of this Section by serving on the United States and the State a written statement of position on the matter in dispute, including, but not limited to, any factual data, analysis or opinion supporting that position and any supporting documentation relied upon by the Settling Defendants.

73. Formal dispute resolution for disputes pertaining to

the selection or adequacy of any response action and all other disputes that are accorded review on the administrative record under applicable principles of administrative law shall be conducted pursuant to the procedures set forth in this Paragraph. For purposes of this Paragraph, the adequacy of any response action includes, without limitation: (1) the adequacy or appropriateness of plans, procedures to implement plans, or any other items requiring approval by EPA under this Consent Decree; and (2) the adequacy of the performance of response actions taken pursuant to this Consent Decree. Nothing in this Consent Decree shall be construed to allow any dispute by Settling Defendants regarding the selection of the remedy or other provisions of the ROD.

a. An administrative record of the dispute shall be maintained by EPA and shall contain all statements of position, including supporting documentation, submitted pursuant to this Paragraph and Paragraph 72.

b. Within fourteen (14) days after receipt of Settling Defendants' statement of position submitted pursuant to Paragraph 72, EPA, and any other party wishing to contest the Settling Defendants position will serve on Settling Defendants its statement of position, including, but not limited to, any factual data, analysis, or opinion supporting that position and all supporting documentation relied upon, in response to Settling Defendants' statement of position. Where appropriate, EPA may allow submission of supplemental statements of position by

the Parties to the dispute.

c. The Director of the Waste Management Division, EPA Region I, will issue a final administrative decision resolving the dispute based on the administrative record described in Paragraph 73 (a) and (b). This decision shall be binding upon the Settling Defendants, subject only to the right to seek judicial review pursuant to Paragraph 73 (d) and (e).

d. Any administrative decision by EPA pursuant to Paragraph 73 (c) shall be reviewable by this Court, provided that a notice of judicial appeal is filed by the Settling Defendants with the Court and served on all Parties within 10 days of receipt of EPA's decision. The notice of judicial appeal shall include a description of the matter in dispute, the efforts made by the Parties to resolve it, the relief requested, and the schedule, if any, within which the dispute must be resolved to ensure orderly implementation of this Consent Decree. The United States may file a response to Settling Defendants' notice of judicial appeal.

e. In proceedings on any dispute governed by this Paragraph, Settling Defendants shall have the burden of demonstrating that the decision of the Waste Management Division Director is arbitrary and capricious or otherwise not in accordance with law. Judicial review of EPA's decision shall be on the administrative record compiled pursuant to Paragraphs 73 (a) and 73 (b).

74. Formal dispute resolution for disputes that neither pertain to the selection or adequacy of any Work nor are otherwise

accorded review on the administrative record under applicable principles of administrative law, shall be governed by this Paragraph.

a. Following receipt of Settling Defendants' statement of position submitted pursuant to Paragraph 72, the Waste Management Division Director will issue a final decision resolving the dispute. The Waste Management Division Director's decision shall be binding on the Settling Defendants unless, within 10 days of receipt of the decision, the Settling Defendants file with the Court and serve on all Parties a notice of judicial appeal setting forth the matter in dispute, the efforts made by the Parties to resolve it, the relief requested, and the schedule, if any, within which the dispute must be resolved to ensure orderly implementation of the Consent Decree. The United States may file a response to Settling Defendants' notice of judicial appeal.

b. Notwithstanding Paragraph M of Section I (Background) of this Consent Decree, judicial review of any dispute governed by this Paragraph shall be governed by applicable provisions of law. In such proceedings, Settling Defendants bear the burden of coming forward with evidence and the burden of persuasion on factual issues. Nothing herein shall prevent any party from arguing that the Court shall apply the appropriate standard of review.

75. The invocation of formal dispute resolution procedures under this Section shall not of itself extend, postpone or affect in any way any obligation of the Settling Defendants under this

Consent Decree, except that payment of stipulated penalties with respect to the disputed matter shall be stayed pending resolution of the dispute as provided in Paragraph 83. Notwithstanding the stay of payment, stipulated penalties shall accrue from the first day of noncompliance with any applicable provision of this Consent Decree. In the event that the Settling Defendants do not prevail on the disputed issue, stipulated penalties shall be assessed and paid as provided in Section XXIII (Stipulated Penalties).

XXIII. STIPULATED PENALTIES

76. Settling Defendants shall jointly and severally be liable for stipulated penalties in the amounts set forth in Paragraphs 77 and 78 to the United States and the State for failure to comply with the requirements of this Consent Decree specified below, unless excused under Section XXI (Force Majeure). "Compliance" by Settling Defendants shall include completion of the activities under this Consent Decree or any work plan or other plan approved under this Consent Decree identified below in accordance with all applicable requirements of law, this Consent Decree, the SOW, and any plans or other documents approved by EPA pursuant to this Consent Decree and within the specified time schedules approved or established under this Consent Decree. For commencement dates, "compliance" by Settling Defendants shall include commencement of the required activity by the deadlines set forth in the time schedules established pursuant to this Consent Decree, SOW, or workplans approved or established thereunder.

77. In the event that Settling Defendants fail to comply with

Section X (Access), Section XII (Submissions Requiring Agency Approval), Section XIV (Assurance of Ability to Complete Work), Section XV (Trust Fund), Section XVIII (Reimbursement of Oversight and Future Response Costs), Section XX (Indemnification and Insurance) of this Consent Decree, or to properly and timely achieve the following major milestones and the deliverables required under the following Subparts of the SOW:

(a) F.1.a.1. (submittal of Supervising/Remedial Design Contractor list(s));

(b) Consent Decree, Paragraph 10.b. (resubmittal, if necessary, of Supervising/Remedial Design Contractor list(s));

(c) G.1.a. (submission of Remedial Action Contractor list);

(d) Consent Decree, Paragraph 12. (resubmittal, if necessary, of Remedial Action Contractor list);

(e) F.1.b. (submittal of Health and Safety Plan);

(f) F.2.a.1. (submittal of Project Operations Plan (all components));

(g) F.2.a.2. (submittal of Pre-Design Work Plan (all components));

(h) F.2.a.3. (submittal of Environmental Monitoring Plan (all components));

(i) F.2.b. (commencement of Pre-Design Work);

(j) F.2.c. (submittal of Pre-Design Report for each investigation in Pre-Design Work Plan);

(k) F.3.a. (submittal of Remedial Design Work Plan);

(l) F.3.a.2.a (submittal of 30% preliminary design);

(m) F.3.a.2.b. (submittal of 60% intermediate design);

(n) F.3.a.2.c. (submittal of 95% pre-final design);

(o) F.3.a.2.d. (submittal of 100% final design);

(p) F.3.a.4. (submittal of Final Environmental Monitoring Plan);

(q) F.3.b. (commencement of Remedial Design Work Plan);

(r) G.2.a. (submittal of Remedial Action Work Plan);

(s) G.2.b. (commencement of Remedial Action);

(t) H. (submittal of Remedial Action--Update of monitoring plan for each component of remedy);

(u) H. (submittal of RA--Update of long-term operation and maintenance for each component of the remedy);

(v) Commence consolidation of wetlands sediments;

(w) Complete consolidation of wetlands sediments;

(x) Commence construction of cap;

(y) Complete construction of cap;

(z) Commence installation of extraction wells;

(aa) Complete installation of extraction wells;

(bb) Commence installation of monitoring wells;

(cc) Complete installation of monitoring wells;

(dd) Commence construction of groundwater treatment plant;

(ee) Complete construction of groundwater treatment plant; and

(ff) Commence operation of groundwater extraction and treatment system,

Settling Defendants shall pay stipulated penalties in the amounts set forth below for each day of each and every violation of said requirements:

Penalty Per Violation Per Day	Period of Noncompliance
$1,000	1st through 7th day
$2,000	8th through 14th day
$4,000	15th through 30th day
$6,000	31st through 60th day
$15,000	61st day and beyond

78. In the event that Settling Defendants fail to comply with Section X (Access and Institutional Controls), Section XI (Reporting Requirements), Section XIII (Remedial Project Manager/Project Coordinators), Section XVI (Certification of Completion), Section XXVIII (Access to Information), Section XXIX (Retention of Records) or Section XXX (Notices and Submissions) of this Consent Decree, or to properly and timely achieve the following milestones and the deliverables required under the following Subparts of the SOW:

(a) F.1.c. (submittal of Site Security Plan);

(b) F.1.d. (submittal of Site Survey/Site Map);

(c) F.1.a.2. (submittal of Letter of Acceptance from Supervising/Remedial Design Contractor);

(d) G.1.b. (submittal of Letter of Acceptance from Remedial Action Contractor);

(e) F.3.a. (submittal of updated Health and Safety Plan under Remedial Design Work Plan);

(f) F.3.a.5. (submittal of operation and maintenance plan for groundwater extraction and treatment);

(g) F.3.a.6. (submittal of operation and maintenance plan for cap and gas collection system); and

(h) G.2.d. (submittal of final remedial construction reports for each component of the remedy),

Settling Defendants shall pay stipulated penalties in the amounts set forth below for each day of each and every violation of said requirements:

Penalty Per Violation Per Day	Period of Noncompliance
$500	1st through 7th day
$1,000	8th through 30th day
$3,000	31st through 60th day
$7,500	61st day and beyond

79. If EPA takes over a portion of the Work pursuant to Paragraph 91 of Section XXIV (Covenants Not to Sue by Plaintiffs), Settling Defendants shall be liable for a stipulated penalty of the lesser of ten percent (10%) of the cost of the portion of the Work, or $200,000. In the event EPA takes over all of the Work pursuant to Paragraph 91, Settling Defendants shall be liable for a stipulated penalty of $200,000.

80. All penalties shall begin to accrue on the day after the complete performance is due or the day a violation occurs, and shall continue to accrue through the final day of the correction of the noncompliance or completion of the activity. Nothing herein shall prevent the simultaneous accrual of separate penalties for separate violations of this Consent Decree.

81.a. All penalties owed to the United States and the State under this Section shall be due and payable (70% payable to the United States, 30% payable to the State) within 30 days of the Settling Defendants' receipt from EPA of a demand for payment of the penalties, unless Settling Defendants invoke the Dispute Resolution procedures under Section XXII (Dispute Resolution). All payments to the United States under this Section shall be paid by certified check made payable to "EPA Hazardous Substances Superfund," shall be mailed to

EPA Region I
Attn: Superfund Accounting
P.O. Box 360197M
Pittsburgh, PA 15251

and shall reference CERCLA Number NHD064424153 and DOJ Case Number 90-11-2-678. Copies of check(s) paid pursuant to this Section,

and any accompanying transmittal letter(s), shall be sent to the United States as provided in Section XXX (Notices and Submissions) and to:

U.S. EPA, Region I
Regional Hearing Clerk
JFK Federal Building, RCG
Boston, MA 02203

b. All payments to the State under this Section shall be paid by certified check made payable to "Treasurer, State of New Hampshire" and shall be mailed to

Charles Holtman
Assistant Attorney General
Environmental Protection Bureau
State House Annex
25 Capitol Street
Concord, NH 03301-6397

82. Neither the invocation of dispute resolution procedures under Section XXII (Dispute Resolution) nor the payment of penalties shall alter in any way Settling Defendants' obligation to complete the performance of the Work required under this Consent Decree.

83. Unless otherwise agreed to by the United States and the State in writing, penalties shall continue to accrue as provided in Paragraph 80 during any dispute resolution period, but need not be paid during the dispute resolution period, until the following:

a. If the dispute is resolved by agreement or by a decision of EPA that is not appealed to this Court, accrued penalties shall be paid to EPA and the State within 15 days of the agreement or the receipt of EPA's decision or order;

b. If the dispute is appealed to this Court and the

United States prevails in whole or in part, Settling Defendants shall pay all accrued penalties determined by the Court to be owed to EPA and the State within 60 days of receipt of the Court's decision or order, except as provided in Subparagraph c below;

c. If the District Court's decision is appealed by any Party, Settling Defendants shall pay all accrued penalties determined by the District Court to be owing to the United States or the State into an interest-bearing escrow account within 60 days of receipt of the Court's decision or order. Penalties shall be paid into this account as they continue to accrue, at least every 60 days. Within 15 days of receipt of the final appellate court decision, the escrow agent shall pay the balance of the account to EPA and the State or to Settling Defendants to the extent that they prevail.

84. a. If Settling Defendants fail to pay stipulated penalties when due, the United States or the State may institute proceedings to collect the penalties, as well as late charges and interest. Settling Defendants shall pay interest on the unpaid balance, which shall begin to accrue at the end of the thirty-day period at the rate established pursuant to Section 107(a) of CERCLA, 42 U.S.C. § 9607.

b. Nothing in this Section shall be construed as prohibiting, altering, or in any way limiting the ability of the United States or the State to seek any other remedies or sanctions available by virtue of Settling Defendants' violation of this Decree or of the statutes and regulations upon which it is

based, including, but not limited to, penalties pursuant to Section 122(l) of CERCLA.

85. No payments made under this Section shall be tax deductible for Federal or State tax purposes.

XXIV. COVENANTS NOT TO SUE BY PLAINTIFFS

86.a. In consideration of the actions that will be performed and the payments that will be made by the Settling Defendants under the terms of the Consent Decree, and except as specifically provided in Paragraphs 87, 88, and 90 of this Section, the United States covenants not to sue or to take administrative action against Settling Defendants pursuant to Section 7003 of RCRA, 42 U.S.C. 6973 and Sections 106 and 107(a) of CERCLA for performance of the Work and for recovery of Past Response Costs and Future Response Costs and Oversight Costs. These covenants not to sue shall take effect upon the effective date of this Consent Decree . These covenants not to sue are conditioned upon the complete and satisfactory performance by Settling Defendants of their obligations under this Consent Decree. These covenants not to sue extend only to the Settling Defendants and do not extend to any other person.

b. In consideration of the payments that will be made by the Settling Federal Agencies under the terms of this Consent Decree, and except as specifically provided in Paragraphs 87, 88, and 90 of this Section, EPA covenants not to issue an order or take administrative action against the Settling Federal Agencies pursuant to Section 7003 of RCRA, 42 U.S.C. § 6973 or Section 106

of CERCLA, 42 U.S.C. § 9606 for performance of the Work or for recovery of Past Response Costs, Future Response Costs, and Oversight Costs. This covenant shall take effect upon the effective date of this Consent Decree, and is conditioned upon satisfactory performance by the Settling Federal Agencies of their obligations under this Consent Decree. This covenant extends only to the Settling Federal Agencies and not to any other person.

c. In consideration of the actions that will be performed and the payments that will be made by the Settling Defendants and Settling Federal Agencies under the terms of the Consent Decree, and except as specifically provided in Paragraph 90 of this Section, the State covenants not to sue or to take administrative action against Settling Defendants or the Settling Federal Agencies pursuant to New Hampshire RSA 147-A:13, Section 107(a) of CERCLA or New Hampshire RSA 147-B for performance of the Work and for recovery of Past Response Costs and Future Response Costs and Oversight Costs. These covenants not to sue shall take effect upon the receipt by the State of the lump sum $100,000 payment required by Paragraph 55 of Section XVIII (Reimbursement of Oversight and Future Response Costs). These covenants not to sue are conditioned upon the complete and satisfactory performance by Settling Defendants and Settling Federal Agencies of their obligations under this Consent Decree. These covenants not to sue extend only to the Settling Defendants and Settling Federal Agencies and do not extend to any other person.

87. United States' pre-certification reservations. Notwithstanding any other provision of this Consent Decree, the United States reserves, and this Consent Decree is without prejudice to, the right to institute proceedings in this action or in a new action, or to issue an administrative order seeking to compel Settling Defendants (1) to perform further response actions relating to the Site or (2) to reimburse the United States for additional costs of response and EPA reserves, and this Consent Decree is without prejudice to, all rights of EPA against Settling Federal Agencies with respect to such further response actions relating to the Site or additional costs of response if, prior to Certification of Completion of the Remedial Action:

(i) conditions at the Site, previously unknown to EPA, are discovered after issuance of the Record of Decision, including the ESD, or

(ii) information is received by EPA, in whole or in part, after issuance of the Record of Decision, including the ESD

and EPA determines, based on these previously unknown conditions or this information together with any other relevant information that the Remedial Action is not protective of human health or the environment.

88. United States' post-certification reservations. Notwithstanding any other provision of this Consent Decree, the United States reserves, and this Consent Decree is without prejudice to, the right to institute proceedings in this action or

in a new action, or to issue an administrative order seeking to compel Settling Defendants (1) to perform further response actions relating to the Site or (2) to reimburse the United States for additional costs of response and EPA reserves, and this Consent Decree is without prejudice to, all rights of EPA against Settling Federal Agencies with respect to such further response actions relating to the Site or additional costs if, subsequent to certification of completion of the Remedial Action:

(i) conditions at the Site, previously unknown to EPA, are discovered after the certification of completion of the Remedial Action, or

(ii) information is received by EPA, in whole or in part, after the Certification of Completion of the Remedial Action

and EPA determines, based on these previously unknown conditions or this information together with other relevant information that the Remedial Action is not protective of human health or the environment.

89. For purposes of Paragraph 87, clause (i), the conditions known to the EPA shall include only those conditions set forth in the Record of Decision, including the ESD, for the Site and in the administrative record supporting the Record of Decision, including the ESD. For purposes of Paragraph 87, clause (ii), information received by the EPA is any information other than that contained in the Record of Decision, including the ESD, for the Site and in the administrative record supporting the Record of Decision,

including the ESD. For purposes of Paragraph 88, clause (i), the conditions known to the EPA shall include only those conditions set forth in the Record of Decision, including the ESD for the Site, in the administrative record supporting the Record of Decision, including the ESD, and any information received by the EPA pursuant to the requirements of this Consent Decree prior to Certification of the Remedial Action. For purposes of Paragraph 88, clause (ii), information received by the EPA is any information other than that contained in the Record of Decision, including the ESD, for the Site, in the administrative record supporting the Record of Decision, including the ESD, and any information received by the EPA pursuant to the requirements of this Consent Decree prior to Certification of Completion of the Remedial Action.

90. General reservations of rights. The covenants not to sue set forth above do not pertain to any matters other than those expressly specified in Paragraph 86. The United States and the State reserve, and this Consent Decree is without prejudice to, all rights against Settling Defendants, and EPA and the State reserve, and this Consent Decree is without prejudice to, all rights against Settling Federal Agencies, with respect to all other matters, including but not limited to, the following:

(1) claims based on a failure by Settling Defendants or Settling Federal Agencies to meet a requirement of this Consent Decree;

(2) liability arising from the past, present, or future

disposal, release, or threat of release of Waste Materials outside of the Site and not attributable to the Site;

(3) liability for the disposal of any Waste Material taken from the Site;

(4) liability for damages for injury to, destruction of, or loss of natural resources;

(5) liability for response costs that have been or may be incurred by the Department of Interior and National Oceanic and Atmospheric Administration;

(6) criminal liability;

(7) liability for violations of federal or state law which occur during or after implementation of the Work; and

(8) liability for additional operable units at the Site, including but not limited to response costs related to Operable Unit 2 incurred prior to or after entry of this Consent Decree, and liability for any other additional response actions and response costs related to the Site not associated with Operable Unit 1.

91. In the event EPA determines that Settling Defendants have failed to implement any provisions of the Work in an adequate or timely manner, EPA may perform any and all portions of the Work as EPA determines necessary. Settling Defendants may invoke the procedures set forth in Section XXII (Dispute Resolution) to dispute EPA's determination that the Settling Defendants failed to implement a provision of the Work in an adequate or timely manner as arbitrary and capricious or otherwise not in accordance with

law. Such dispute shall be resolved on the administrative record. Costs incurred by the United States in performing the Work pursuant to this Paragraph shall be considered Future Response Costs that Settling Defendants shall pay pursuant to Section XVIII (Reimbursement of Oversight and Future Response Costs).

92. Notwithstanding any other provision of this Consent Decree, the United States and the State retain all authority and reserve all rights to take any and all response actions authorized by law. In any claim pursuant to Paragraphs 87 or 88 of this Consent Decree asserted by the United States or the State in this action or in a new action, Settling Defendants reserve and retain their right to assert all defenses to said claim. The entry of this Consent Decree shall not be construed to be an acknowledgment by any Settling Defendant that there has been a release or threatened releases at the Site or that any such release or threatened release constitutes an imminent and substantial endangerment to the public health or welfare or the environment. Additionally, the participation by any Settling Defendant in this Consent Decree shall not be considered an admission of liability and shall not be admissible in evidence against any Settling Defendant in any action other than (a) an action to enforce this Consent Decree or (b) an action in which any party to this Consent Decree needs to establish one or more terms of this Consent Decree.

XXV. COVENANTS BY SETTLING DEFENDANTS

93. a. Settling Defendants covenant not to sue or take

administrative action against the United States with respect to matters addressed by this Consent Decree or with respect to matters relating to implementation of this Consent Decree, including, but not limited to: any direct or indirect claim for reimbursement from the Hazardous Substances Superfund (established pursuant to the Internal Revenue Code, 26 U.S.C. § 9507) through CERCLA Sections 106(b)(2), 111 or 112, any other provision of law; any claim against any department, agency or instrumentality of the United States related to the Site; and any claims arising out of response activities at the Site. However, the Settling Defendants reserve, and this Consent Decree is without prejudice to, actions against the United States based on negligent actions taken directly by the United States after the date of lodging of this Consent Decree (not including oversight or approval of the Settling Defendants plans or activities) that are brought pursuant to any statute other than CERCLA and for which the waiver of sovereign immunity is found in a statute other than CERCLA. The Settling Defendants reserve such claims or rights as are granted to them under this Consent Decree and the SOW. Nothing in this Consent Decree shall be deemed to constitute preauthorization of a claim within the meaning of Section 111 of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).

b. Settling Defendants and Settling Federal Agencies covenant not to sue or take administrative action against the State with respect to matters addressed by this Consent Decree or with respect to matters relating to implementation of this Consent

Decree, including, but not limited to: any claim against any department, agency, or instrumentality of the State related to the Site; and any claim arising out of response activities at the Site. However, the Settling Defendants and the Settling Federal Agencies reserve, and this Consent Decree is without prejudice to, actions against the State based on negligent actions taken directly by the State after the date of lodging of this Consent Decree (not including oversight or approval of the Settling Defendants plans or activities) that are brought pursuant to any statute other than CERCLA and for which the waiver of sovereign immunity is found in a statute other than CERCLA. The Settling Defendants and the Settling Federal Agencies reserve such claims or rights as are granted to them under this Consent Decree and the SOW.

XXVI. MUTUAL COVENANTS BY SETTLING DEFENDANTS AND SETTLING FEDERAL AGENCIES

94. In consideration of the actions that will be performed and the payments that will be made by the Settling Defendants under the terms of this Consent Decree, the United States, on behalf of the Settling Federal Agencies, covenants not to sue the Settling Defendants for contribution pursuant to CERCLA §§ 107(a) or 113(f), 42 U.S.C. §§ 9607(a) or 9613(f); state statutory or common law; or any other provision of law, with respect to any matter resolved in this Consent Decree. This covenant not to sue is conditioned upon the complete and satisfactory performance by Settling Defendants of their obligations under this Consent Decree. This covenant extends only to the Settling Defendants,

and not to any other person.

95. a. In consideration of the payments that will be made by the United States on behalf of the Settling Federal Agencies under the terms of this Consent Decree, the Settling Defendants covenant not to sue the United States for contribution pursuant to CERCLA §§ 107(a) or 113(f), 42 U.S.C. §§ 9607(a) or 9613(f); state statutory or common law; or any other provision of law, with respect to any matter resolved in this Consent Decree. This covenant not to sue is conditioned on performance by the Settling Federal Agencies of their obligations under this Consent Decree. For purposes of this Paragraph "any matter resolved in this Consent Decree" includes the resolution outlined in Paragraph 61, and further includes any allegation that any agency, department or instrumentality of the United States other than the Settling Federal Agencies is liable with regard to the same matters.

b. If and only if (a) the Settling Defendants are required to pay and do pay the refund set forth in Paragraph 62, (b) the United States institutes a further proceeding or EPA issues an administrative order after the date that refund payment is made to require further response actions for Operable Unit 1 pursuant to Paragraph 23 (EPA Periodic Review), and (c) the Settling Defendants perform further response actions pursuant to that further proceeding or administrative order, the Settling Defendants' covenant not to sue the United States for contribution set forth in Subparagraph 95.a. shall not apply to the costs Settling Defendants incur to perform the further response actions

required by that further proceeding or administrative order. Also, in that event, the United States' covenant not to sue the Settling Defendants for contribution set forth in Paragraph 94 shall not apply to any costs that the United States incurs for further response actions for Operable Unit 1 required by any order issued to the Settling Federal Agencies by EPA pursuant to Paragraph 23 (EPA Periodic Review) after the date of the refund payment. The provisions of this Subparagraph shall not affect the provisions of Paragraph 94 or Subparagraph 95.a. in any respect not specifically set forth in this Subparagraph.

XXVII. EFFECT OF SETTLEMENT; CONTRIBUTION PROTECTION

96. Nothing in this Consent Decree shall constitute or be construed as a release or covenant not to sue regarding any claim or cause of action against any person, firm, trust, joint venture, partnership, corporation or other entity not a signatory to this Consent Decree for any liability at the Site. The preceding sentence shall not be construed to waive or nullify any rights that any person not a signatory to this Decree may have under applicable law. Each of the Parties expressly reserves any and all rights (including, but not limited to, any right to contribution), defenses, claims, demands, and causes of action which each party may have with respect to any matter, transaction, or occurrence relating in any way to the Site against any person not a party hereto.

97. With regard to claims for contribution against Settling Defendants and Settling Federal Agencies for matters addressed in

this Consent Decree, the Parties hereto agree that the Settling Defendants and the Settling Federal Agencies are entitled, as of the effective date of this Consent Decree, to such protection from contribution actions or any other claims as is provided by CERCLA Section 113(f)(2), 42 U.S.C. § 9613(f)(2). Settling Federal Agencies expressly acknowledge that their arrangement with the Settling Defendants, embodied in the terms of this Consent Decree, was reached after appropriate negotiations at arms length. Settling Defendants expressly acknowledge that their arrangement with the Settling Federal Agencies, embodied in the terms of this Consent Decree, was reached after appropriate negotiations at arms length.

98. The Settling Defendants agree that with respect to any suit or claim for contribution brought by them for matters related to this Consent Decree they will notify the United States and the State in writing no later than 60 days prior to the initiation of such suit or claim, and, as soon as practicable, motions for summary judgment and trials. The Settling Defendants also agree that with respect to any suit or claim for contribution brought against them for matters related to this Consent Decree they will notify in writing the United States and the State within 10 days of service of the complaint on them.

99. In any subsequent administrative or judicial proceeding initiated by the United States or the State for injunctive relief, recovery of response costs, or other appropriate relief relating to the Site, Settling Defendants shall not assert, and may not

maintain, any defense or claim based upon the principles of waiver, res judicata, collateral estoppel, issue preclusion, claim-splitting, or other defenses based upon any contention that the claims raised by the United States or the State in the subsequent proceeding were or should have been brought in the instant case; provided, however, that nothing in this Paragraph affects the enforceability of the covenants not to sue set forth in Section XXIV (Covenants Not to Sue by Plaintiffs).

100. In any subsequent administrative or judicial proceeding initiated by the State, and in any subsequent administrative proceeding initiated by EPA, for injunctive relief, recovery of response costs, or other appropriate relief relating to the Site, Settling Federal Agencies shall not assert, and may not maintain, any defense or claims based on the principles of waiver, res judicata, collateral estoppel, issue preclusion, claim-splitting, or other defenses based upon any contention that the claims raised by the United States or the State in the subsequent proceeding were or should have been brought in the instant case; provided, however, that nothing in this Paragraph affects the enforceability of the covenants not to sue set forth in Section XXIV (Covenants Not to Sue by Plaintiffs).

XXVIII. ACCESS TO INFORMATION

101. Settling Defendants shall provide to EPA and the State, upon request, copies of all documents and information within their possession or control or that of their contractors or agents relating to activities at the Site or to the implementation of

this Consent Decree, including, but not limited to, sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other documents or information related to the Work. This shall apply to both validated and unvalidated sampling, testing and other analytical data. Settling Defendants shall also make available to EPA and the State, for purposes of investigation, information gathering, or testimony, their employees, agents, or representatives with knowledge of relevant facts concerning the performance of the Work.

102. a. Settling Defendants may assert business confidentiality claims covering part or all of the documents or information submitted to EPA under this Consent Decree to the extent permitted by and in accordance with Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), and 40 C.F.R. § 2.203(b). Documents or information determined to be confidential by EPA will be afforded the protection specified in 40 C.F.R. Part 2, Subpart B. If no claim of confidentiality accompanies documents or information when they are submitted to EPA, or if EPA has notified Settling Defendants that the documents or information are not confidential under the standards of Section 104(e)(7) of CERCLA, the public may be given access to such documents or information without further notice to Settling Defendants.

b. Settling Defendants may assert business confidentiality claims covering part or all of the documents or information submitted to the State under this Consent Decree to the extent

permitted by and in accordance with RSA Chapter 91-A. Documents or information determined to be confidential by the State will be afforded the protection specified in RSA Chapter 91-A. If no claim of confidentiality accompanies documents or information when they are submitted to the State, or if the State has notified Settling Defendants that the documents or information are not confidential under the standards of RSA Chapter 91-A, the public may be given access to such documents or information without further notice to Settling Defendants.

c. The Settling Defendants may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If the Settling Defendants assert such a privilege, they shall provide the Plaintiffs with the following: (1) the title of the document, record, or information; (2) the date of the document, record, or information; (3) the name and title of the author of the document, record, or information; (4) the name and title of each addressee and recipient; (5) a description of the contents of the document, record, or information; and (6) the privilege asserted by Settling Defendants. However, no documents, reports or other information created or generated pursuant to the requirements of the Consent Decree shall be withheld on the grounds that they are privileged.

103. No claim of confidentiality shall be made with respect to any data, including, but not limited to, all sampling, analytical, monitoring, hydrogeologic, scientific, chemical, or

engineering data, or any other documents or information evidencing conditions at or around the Site.

XXIX. RETENTION OF RECORDS

104. Until 10 years after the Settling Defendants' receipt of EPA's notification pursuant to Paragraph 52.b of Section XVI (Certification of Completion of Work), each Settling Defendant shall preserve and retain all records and documents now in its possession or control or which come into its possession or control that relate in any manner to the performance of the Work or liability of any person for response actions conducted and to be conducted at the Site, regardless of any corporate retention policy to the contrary. Until 10 years after the Settling Defendants' receipt of EPA's notification pursuant to Paragraph 52.b of Section XVI (Certification of Completion of Work), Settling Defendants shall also instruct their contractors and agents to preserve all documents, records, and information of whatever kind, nature or description relating to the performance of the Work.

105. At the conclusion of this document retention period, Settling Defendants shall notify the United States and the State at least 90 days prior to the destruction of any such records or documents, and, upon request by the United States or the State, Settling Defendants shall deliver any such records or documents to EPA or the State. The Settling Defendants may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege recognized by

federal law. If the Settling Defendants assert such a privilege, they shall provide the Plaintiffs with the following: (1) the title of the document, record, or information; (2) the date of the document, record, or information; (3) the name and title of the author of the document, record, or information; (4) the name and title of each addressee and recipient; (5) a description of the subject of the document, record, or information; and (6) the privilege asserted by Settling Defendants. However, no documents, reports or other information created or generated pursuant to the requirements of the Consent Decree shall be withheld on the grounds that they are privileged.

106. Each Settling Defendant and Settling Federal Agency hereby certifies, individually, that it has not altered, mutilated, discarded, destroyed or otherwise disposed of any records, documents or other information relating to its potential liability regarding the Site since notification of potential liability by the United States or the State or the filing of suit against it regarding the Site and that it has fully complied with any and all EPA requests for information pursuant to Section 104(e) and 122(e) of CERCLA and Section 3007 of RCRA.

XXX. NOTICES AND SUBMISSIONS

107. Whenever, under the terms of this Consent Decree, written notice is required to be given or a report or other document is required to be sent by one party to another, it shall be directed to the individuals at the addresses specified below, unless those individuals or their successors give notice of a

change to the other parties in writing. Written notice as specified herein shall constitute complete satisfaction of any written notice requirement of the Consent Decree with respect to the United States, EPA, the State, the Settling Defendants, and Settling Federal Agencies, respectively.

As to the United States:

Chief, Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
P.O. Box 7611
Ben Franklin Station
Washington, D.C. 20044
Re: DJ # 90-11-2-678

and

Director, Waste Management Division
United States Environmental Protection Agency
Region I
J.F.K. Federal Building
Boston, MA 02203-2211

Re: Coakley Landfill Superfund Site

As to EPA:

Steven J. Calder
EPA Remedial Project Manager
Coakley Landfill Superfund Site, North Hampton, NH
United States Environmental Protection Agency
Region I
J.F.K. Federal Building
Boston, MA 02203-2211

As to the State:

Michael J. Robinette
State Project Coordinator
New Hampshire Department of
Environmental Services
6 Hazen Drive
Concord, NH 03301

As to the Settling Defendants:

Settling Defendants' Project Coordinator

As to the Department of the Air Force:

Hugh Fennell
AFCEE/ESA
77 Forsyth Street, S.W.
Atlanta, GA 30335-6801

As to the Department of the Navy:

Linda Resta
Code 1421, Northern Division
Naval Facilities Engineering Command
Bldg. 77-L, U.S. Naval Base
Philadelphia, PA 19112-5094

XXXI. EFFECTIVE DATE

108. The effective date of this Consent Decree shall be the date upon which this Consent Decree is entered by the Court, except as otherwise provided herein.

XXXII. RETENTION OF JURISDICTION

109. This Court retains jurisdiction over both the subject matter of this Consent Decree and personal jurisdiction over the Settling Defendants and the Settling Federal Agencies for the duration of the performance of the terms and provisions of this Consent Decree for the purpose of enabling any of the Parties to apply to the Court at any time for such further order, direction, and relief as may be necessary or appropriate for the construction or modification of this Consent Decree, or to effectuate or enforce compliance with its terms, or to resolve disputes in

accordance with Section XXII (Dispute Resolution) hereof.

XXXIII. APPENDICES

110. The following appendices are attached to and incorporated into this Consent Decree:

"Appendix A" is the ROD.

"Appendix B" is the SOW.

"Appendix C" is the description of the Site.

"Appendix D" is the complete list of the Settling Defendants.

XXXIV. COMMUNITY RELATIONS

111. Settling Defendants shall propose to EPA and the State their participation in the community relations plan to be developed by EPA. EPA will determine the appropriate role for the Settling Defendants under the Plan. Settling Defendants shall also cooperate with EPA and the State in providing information regarding the Work to the public. As requested by EPA or the State, Settling Defendants shall participate in the preparation of such information for dissemination to the public and in public meetings which may be held or sponsored by EPA or the State to explain activities at or relating to the Site.

XXXV. MODIFICATION

112. Schedules for completion of the Work specified in this Consent Decree may be modified by agreement of EPA, the State and Settling Defendants. All such modifications shall be made in writing and a copy shall be filed with the Court.

113. No material modifications shall be made to the SOW, the Remedial Design Work Plan, and the Remedial Action Work Plan,

without written notification to and written approval of the United States, Settling Defendants, and the Court. Prior to providing its approval to any modification, the United States will provide the State with a reasonable opportunity to review and comment on the proposed modification. Modifications to the SOW, the Remedial Design Work Plan, and the Remedial Action Work Plan that do not materially alter those documents may be made by written agreement between EPA, after providing the State with a reasonable opportunity to review and comment on the proposed modification, and the Settling Defendants. A copy of any such modifications shall be filed with the Court.

114. Nothing in this Section shall be deemed to alter the Court's power to supervise or modify this Consent Decree.

XXXVI. LODGING AND OPPORTUNITY FOR PUBLIC COMMENT

115. This Consent Decree shall be lodged with the Court for a period of thirty (30) days for public notice and comment in accordance with Section 122(d)(2) of CERCLA, 42 U.S.C. § 9622(d)(2), and 28 C.F.R. § 50.7. The United States, in consultation with the State, reserves the right to withdraw or withhold its consent if the comments regarding the Consent Decree disclose facts or considerations which indicate that the Consent Decree is inappropriate, improper, or inadequate. Settling Defendants consent to the entry of this Consent Decree without further notice.

116. If for any reason the Court should decline to approve this Consent Decree in the form presented, this agreement is

voidable at the sole discretion of any party and the terms of the agreement may not be used as evidence in any litigation between the Parties.

XXXVII. CONTINGENCY

117. This Consent Decree is contingent upon approval of the City Council of Portsmouth and the voters of the Town of North Hampton and the Town of Newington (as determined by Town meetings). If, by November 18, 1991, the City Council of Portsmouth has not approved the Consent Decree or if, by January 30, 1992, the voters of the Town of North Hampton and the Town of Newington have not affirmed their respective Town's entry into the Consent Decree, any party may withdraw its consent to this Consent Decree. No later than November 19, 1991, the City will inform the other parties to this Decree in writing as to whether the contingency has been satisfied as to the City of Portsmouth. No later than January 31, 1992, the Towns shall inform the other parties to the Decree in writing as to whether the contingency has been satisfied as to the Town of North Hampton and the Town of Newington, respectively. If the contingencies are not satisfied by November 18, 1991, by the City of Portsmouth or by January 30, 1992, by the Towns of North Hampton and Newington, each party reserves all of its rights, including but not limited to the right to withdraw its consent to the Decree and its rights under applicable federal and state laws.

XXXVIII. SIGNATORIES/SERVICE

118. Each undersigned representative of a Settling Defendant

and the Assistant Attorney General for Environment and Natural Resources of the Department of Justice certifies that he or she is fully authorized to enter into the terms and conditions of this Consent Decree and to execute and legally bind such party to this document.

119. Each Settling Defendant hereby agrees not to oppose entry of this Consent Decree by this Court or to challenge any provision of this Consent Decree unless the United States has notified the Settling Defendants in writing that it no longer supports entry of the Consent Decree.

120. Each Settling Defendant shall identify, on the attached signature page, the name and address of an agent who is authorized to accept service of process by mail on behalf of that party with respect to all matters arising under or relating to this Consent Decree. Settling Defendants hereby agree to accept service in that manner and to waive the formal service requirements set forth in Rule 4 of the Federal Rules of Civil Procedure and any applicable local rules of this Court, including, but not limited to, service of a summons. No answer to the Complaints filed by the Plaintiffs is required by any Settling Defendant or Settling Federal Agency who is a signatory to this Consent Decree.

SO ORDERED THIS 4th DAY OF May, 1992

United States District Judge

THE UNDERSIGNED PARTIES enter into this Consent Decree in the matter of United States v. City of Portsmouth, New Hampshire, et al., relating to the Coakley Landfill Superfund Site.

FOR THE UNITED STATES OF AMERICA

Date: FEB 21 1992

Barry M. Hartman
Acting Assistant Attorney General
Environment and Natural Resources Division
U.S. Department of Justice
Washington, D.C. 20530

Elizabeth Yu, Esq.
Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
Washington, D.C. 20530

Michael D. Rowe, Esq.
Environmental Defense Section
Environment and Natural Resources Division
U.S. Department of Justice
Washington, D.C. 20530

Jeffrey R. Howard
United States Attorney

GW for
Elaine Marzetta Lacy
Elaine Marzetta Lacy
Assistant United States Attorney
District of New Hampshire
55 Pleasant Street, Room 439
Concord, NH 03301

Julie Belaga
Julie Belaga
Regional Administrator, Region I
U.S. Environmental Protection
Agency
JFK Federal Building, RAA
Boston, MA 02203

Cynthia E. Catri
Cynthia E. Catri, Esq.
Assistant Regional Counsel
U.S. Environmental Protection
Agency
Region I
JFK Federal Building, RCV
Boston, MA 02203

United States v. City of Portsmouth, New Hampshire, et. al.

Consent Decree Signature Page

FOR THE STATE OF NEW HAMPSHIRE

Date: 9/26/97

Name: John Dabulewicz
Title: Assistant Commissioner
Address: N.H. Department of
Environmental Services
6 Hazen Drive
Concord, New Hampshire 03301
Tel. No. (603) 271-3503

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. City of Portsmouth, New Hampshire, et. al., relating to the Coakley Landfill Superfund Site.

FOR CITY OF PORTSMOUTH
City of Portsmouth, New Hampshire

Date: Jan. 29, 1992

Name: Kenneth R. Mahony
Title: City Manager, City of Portsmouth
Address: 1 Junkins Ave. - P.O. Box 628
Portsmouth, NH 03802-0628

Tel. No.: (603) 431-2000

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name: Robert P. Sullivan
Title: City Attorney
Address: Portsmouth Municipal Complex
1 Junkins Ave. - P.O. Box 628
Portsmouth, NH 03802-0628

Tel. No.: (603) 431-2000, Ext. 204

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States vs. City of Portsmouth, New Hampshire, et al. relating to the Coakley Landfill Superfund site.

Dated: January 28, 1992

TOWN OF NORTH HAMPTON

By: R. P. Crowley
Richard P. Crowley, Chairman
Board of Selectmen

By: Mary B Herbert
Mary B. Herbert, Selectperson

By: Richard J. Lynch
Richard J. Lynch, Selectperson

Town of North Hampton
Town Offices
North Hampton, NH 03862
(603) 964-8087

Agent Authorized to accept service on behalf of the Town of North Hampton:

Mark E. Beliveau, Esquire
Sanders and McDermott
234 Lafayette Road
P.O. Box 5070
Hampton, New Hampshire 03842
(603) 926-8926
Facsimile Number: (603) 926-0564

THE UNDERSIGNED PARTIES enter into this Consent Decree in the matter of United States v. City of Portsmouth, New Hampshire, et. al., relating to the Coakley Landfill Superfund Site.

FOR the Town of Newington, New Hampshire

Date: January 23, 1992

Name: Frederick H. Smith, III
Title: Selectman for the Town of Newington, New Hampshire
Address: Newington Town Hall
Newington, NH 03801
Tel. No.: 603-436-7640

Date: January 23, 1992

Name: Margaret F. Lamson
Title: Selectman for the Town of Newington, New Hampshire
Address: Newington Town Hall
Newington, NH 03801
Tel. No.: 603-436-7640

Date: January 23, 1992

Name: John R. Mazeau
Title: Selectman for the Town of Newington, New Hampshire
Address: Newington Town Hall
Newington, NH 03801
Tel. No.: 603-436-7640

Agents Authorized to Accept Service on Behalf of Above-signed Parties:

Name:
Title: One of the Town Selectmen
Address: Newington Town Hall
Newington, New Hampshire 03801
Tel. No.: 436-7640

and

Name:
Title: Town of Newington Clerk
Address: Newington Town Hall
Newington, New Hampshrie 03801
Tel. No. 603-436-7640

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. City of Portsmouth, New Hampshire, et. al., relating to the Coakley Landfill Superfund Site.

FOR BOOTH FISHERIES CORPORATION

Date: 9/27/91

W. S. Lipsman

Name: W. S. LIPSMAN
Title: VICE PRESIDENT
Address: THREE FIRST NATIONAL PLAZA
SUITE 4600
CHICAGO, IL 60602

Tel. No.: 312/558-8538

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name: SETH D. JAFFE
Title: FOLEY HOAG & ELIOT
Address: ONE POST OFFICE SQUARE
BOSTON, MA 02109

Tel. No.: 617/482-1390

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. City of Portsmouth, New Hampshire, et. al., relating to the Coakley Landfill Superfund Site.

FOR BROWNING-FERRIS INDUSTRIES of NEW HAMPSHIRE, INC.

Date: September 27, 1991

Name: GERALD R. BURGER
Title: Vice President
Address: 757 N. Eldridge
HOUSTON, TEXAS 77079

Tel. No.: (713) 870-7820

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name: Robert L. Gulley, Esq.
Title: Attorney
Address: Sidley & Austin
1722 Eye Street, N.W.
Washington, D.C. 20006

Tel. No.: (202) 736-8013

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. City of Portsmouth, New Hampshire, et. al., relating to the Coakley Landfill Superfund Site.

FOR Custom Pools, Inc.

Date: SEPT. 27, 1991 Eugene N. Short

Name: Eugene N. Short
Title: President
Address: Custom Pools, Inc.
123 North River Road
Newington, NH 03801

Tel. No.: 603-431-7800

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name: Beatrice L. Short
Title: Secretary/Registered Agent
Address: Custom Pools, Inc.
123 North River Road
Newington, NH 03801

Tel. No : 603-431-7800

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. City of Portsmouth, New Hampshire, et. al., relating to the Coakley Landfill Superfund Site.

FOR Erie Scientific Company

Date: September 27, 1991

Name: Donald G. Rackl
Title: Vice President, Treasurer
Address: 411 East Wisconsin Avenue
Milwaukee, WI 53202

Tel. No.: (414) 274-6600

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name: R. Jeffrey Harris
Title: Secretary
Address: 411 East Wisconsin Avenue
Milwaukee, WI 53202

Tel. No.: (414) 274-6600

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. City of Portsmouth, New Hampshire, et. al., relating to the Coakley Landfill Superfund Site.

FOR GARY W. BLAKE, Inc.

Date: Sept 26, 1997

Name: GARY W. BLAKE
Title: PRES.
Address: 58 PORTSMOUTH AVE
EXETER NH 03833

Tel. No.: 603-778-0563

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name: Stephen G. Hermans, Esquire
Title: Attorney
Address: HOLLAND, DONOVAN, BECKETT & HERMANS
151 Water Street, P.O. Box 1090
Exeter, New Hampshire 03833

Tel. No.: (603) 772-5956

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. City of Portsmouth, New Hampshire, et. al., relating to the Coakley Landfill Superfund Site.

FOR George Frisbee, Individually and
d/b/a Seacoast Trucking and Moving Company

Date: September 26, 1991

Name: George Frisbee
Title:
Address: 13 Grover Avenue
Eliot, Maine 03903

Tel. No.: 207-439-1948

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name: James G. Noucas
Title: Attorney for George Frisbee
Address: Mulvey, Noucas and Cornell, PA
PO Box 478
Portsmouth, NH 03802-0478

Tel. No.: 603-431-1333

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. City of Portsmouth, New Hampshire, et. al., relating to the Coakley Landfill Superfund Site.

FOR GTE PRODUCTS CORPORATION

Date: 9/27/91

Name: Dr. Allen M. Alper
Title: Vice President & General Manager
Address: GTE Chemical & Metallurgical Division
Hawes Street
Towanda, Pennsylvania 18848

Tel. No.: (717) 265-2121

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. City of Portsmouth, New Hampshire, et. al., relating to the Coakley Landfill Superfund Site.

SUBJECT TO THE APPROVAL OF THE U.S. BANKRUPTCY COURT.

FOR Gypsum Haulage

Date: January 10, 1992

James A. Harmon

Name: James A. Harmon
Title: Vice President Quality and Safety
Address: c/o Bulk Materials, Inc.
6500 Pearl Road
Cleveland, Ohio 44130

Tel. No.: (216) 888-6500

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name: Jacqueline A. Musacchia, Esq.
Title: General Counsel
Address: c/o Bulk Materials, Inc.
6500 Pearl Road
Cleveland, Ohio 44130

Tel. No.: (216) 888-6500

UNITED STATES BANKRUPTCY COURT
SOUTHERN DISTRICT OF NEW YORK

In re:	:	Chapter 11 Case Nos. 91 B 13999 (JLG) through 91 B 14016 (JLG)
BULK MATERIALS INVESTMENTS, INC., et al.,	:	
Debtors.	:	

ORDER APPROVING THE SETTLEMENT OF A CONTROVERSY AMONG DEBTOR GYPSUM HAULAGE, INC., THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, THE STATE OF NEW HAMPSHIRE AND POTENTIALLY RESPONSIBLE PARTIES

Upon the order to show cause entered by this Court on January 24, 1992, scheduling a hearing on the application ("Application") of Bulk Materials Investments, Inc., et al., debtors and debtors-in-possession (collectively, the "Debtors"), dated January 23, 1992 for an order pursuant to Bankruptcy Rule 9019(a), approving the settlement of a controversy among Debtor Gypsum Haulage, Inc. ("Gypsum"), the United States of America, on behalf of the Administrator of the United States Environmental Protection Agency ("the EPA"), the State of New Hampshire and potentially responsible parties (as that term is used in 42 U.S.C. §9607[a]), which order to show cause, pursuant to Bankruptcy Rule 9006(c), shortened the notice period required by Bankruptcy Rule 2002(a)(3) for a hearing on this application and limited notice pursuant to

Bankruptcy Rule 2002(i); upon the service of the order to show cause and application as set forth in the order to show cause; upon no objections having been filed to the Application; upon the hearing held before this Court on January 31, 1992; upon the Debtors' showing in the Application and at the hearing that the proposed settlement is reasonable, and upon the due deliberation of this Court, it is

ORDERED, that the settlement of the controversy described in the Application among Gypsum, the EPA, the State of New Hampshire and potentially responsible parties is approved as to Gypsum; and it is further

ORDERED, that Gypsum is authorized to settle the controversy as a cash out generator (as that term is used in the Coakley Landfill Superfund Site Generator Group Participation Agreement [the "Generator Group Agreement"]), annexed as Exhibit D to the Application; and it is further

ORDERED, that Gypsym is authorized to execute (i) the proposed consent decree in the litigation presently pending in the United States District Court for the District of New Hampshire filed by the United States of America and the State of New Hampshire against the City of Portsmouth, New Hampshire and other defendants including Gypsum (annexed as Exhibit B to the Application), (ii) the Coakley Landfill Group Participation Agreement (annexed as Exhibit C to the Application) and (iii) the Generator Group Agreement; provided, however, that, in executing the settlement documents, Gypsum is not authorized to

make any representations or give any assurances regarding its future financial condition; and it is further

ORDERED, that Gypsum is authorized to pay $54,492 as provided in the settlement documents named in the preceding decretal paragraph at the time and in the manner required by the settlement documents; and it is further

ORDERED, that Gypsum is authorized to execute other documents and take whatever other or further actions are necessary and appropriate to settle the controversy, excluding the payment of any sum other than the $54,492 cash out generator settlement amount.

Dated: New York, New York
January 31, 1992

S/ JAMES L. GARRITY, JR.
James L. Garrity, Jr.
United States Bankruptcy Judge

7124b

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. City of Portsmouth, New Hampshire, et. al., relating to the Coakley Landfill Superfund Site.

FOR JET-LINE SERVICES, INC.

Date: September 27, 1991

Name: Neal M. Drawas
Title: President
Address: Jet-Line Services, Inc.
P. O. Box 180
441 R Canton Street
Stoughton, MA 02072
Tel. No.: (617) 344-2510

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name: Neal M. Drawas
Title: President
Address: JET-LINE SERVICES, INC.
8 Progress Drive
Dover, NH 03820

Tel. No.: (603) 749-5735

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. City of Portsmouth, New Hampshire, et. al., relating to the Coakley Landfill Superfund Site.

FOR K. J. Quinn & Co., Inc.

Date: 9/26/91

Edward L Quinn

Name: Edward L. Quinn
Title: President
Address: P.O. Box 158
135 Folly Mill Road
Seabrook, NH 03874

Tel. No.: 1-603-474-7177

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name: Martin C. Pentz, Esq.
Title: Attorney
Address: Nutter, McClennen & Fish
One International Place
Boston, MA 02110

Tel. No.: 617-439-2000

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. City of Portsmouth, New Hampshire, et. al., relating to the Coakley Landfill Superfund Site.

K mart's consent is contingent upon the City of Portsmouth, Town of North Hampton, and Town of Newington executing, authorizing and ratifying the Consent Decree and the Participation Agreement.

FOR K mart Corporation

Date: September 27, 1991

Linda E. Christenson

Name: Linda E. Christenson, Esq.
Title: Counsel, Kilpatrick & Cody
Address: 700 - 13th Street, N.W.
Suite 800
Washington, D.C. 20005

Tel. No.: (202) 508-5828

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name: Linda E. Christenson, Esq.
Title: Counsel, Kilpatrick & Cody
Address: 700 - 13th Street, N.W.
Suite 800
Washington, D.C. 20005

Tel. No.: (202) 508-5828

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. City of Portsmouth, New Hampshire, et. al., relating to the Coakley Landfill Superfund Site.

FOR MOBIL OIL CORPORATION

Date: September 30, 1991

Name: R. J. Brenner
Title: Superfund Response Manager
Address: P. O. Box 1039
Princeton, NJ 08543-1039

Tel. No.: 609/531-0527

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name:
Title: Office Manager
Address: Prentice Hall Corporation System Inc.
84 State St., 5th floor
Boston, MA 02109

Tel. No.: (617) 227-9554

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. City of Portsmouth, New Hampshire, et. al., relating to the Coakley Landfill Superfund Site.

FOR MONTGOMERY WARD & CO., INCORPORATED

Date: September 27, 1991

Name: James J. Kupka
Title: Senior Attorney
Address: One Montgomery Ward Plaza
Chicago, Illinois 60671

Tel. No.: (312) 467-7494

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name: James J. Kupka
Title: Senior Attorney
Address: One Montgomery Ward Plaza
Chicago, Il. 60671

Tel. No.: (312) 467-7494

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. City of Portsmouth, New Hampshire, et. al., relating to the Coakley Landfill Superfund Site.

FOR NEW ENGLAND TELEPHONE AND TELEGRAPH COMPANY

Date: 9/27/91

Name: MORRISON DESOTO WEBB
Title: VICE PRESIDENT AND GENERAL COUNSEL
Address: 125 High Street
Boston, MA 02193

Tel. No.: (617) 743-7030

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name: Robert S. Sanoff, Esq.
Title: Attorney
Address: Foley, Hoag & Eliot
One Post Office Square
Boston, MA 02109

Tel. No.: 617-482-1390

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. City of Portsmouth, New Hampshire, et. al., relating to the Coakley Landfill Superfund Site.

FOR NEWINGTON MIDAS MUFFLER

Date: 9/17/91

Arthur J. Epstein

Name: ARTHUR S. EPSTEIN
Title: PRES.
Address: C/O WAKEFIELD MGT.
50 SALEM ST.
LYNNFIELD, MA. 01940
Tel. No.: 617 246 3130

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name: Steven P. Rosenthal
Title: Attorney
Address: Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P..C
One Financial Center
Boston, MA 02111

Tel. No.: (617) 542-6000

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. City of Portsmouth, New Hampshire, et. al., relating to the Coakley Landfill Superfund Site.

FOR NORTHERN UTILITIES, INC.

Date: September 27, 1991

Thomas A. Sacco

Name: Thomas A. Sacco
Title: Vice President
Address: 300 Friberg Parkway
Westborough, MA 01581

Tel. No.: (508) 836-7000

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name: Ann Chisholm (Brickley, Sears & Sorett)
Title: Esquire
Address: 75 Federal Street
Boston, MA 02110

Tel. No.: (617) 542-0896

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. City of Portsmouth, New Hampshire, et. al., relating to the Coakley Landfill Superfund Site.

FOR Pike Associates Inc.

Date: 1/30/92

Name: Bruce A Pike
Title: President
Address: 142 Presumpscot St.
Portland, Me. 04103

Tel. No.: 207 772-7404

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name: Bruce A. Pike
Title: President
Address: 142 Presumpscot St.
Portland, Me. 04103

Tel. No.: 207-772-7404

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. City of Portsmouth, New Hampshire, et. al., relating to the Coakley Landfill Superfund Site.

FOR: POST MACHINERY COMPANY, INC.

DATE: September 26, 1991

by _____
Name: Allen J. Prochnow
Title: President
Address: 15800 W. Overland Dr.
New Berlin, Wisconsin 53151

Tel. No.: 414-786-2500

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name: Mark Brandenburger, Esq.
Title: Corporate Counsel
Address: c/o Hamilton-Stevens Group, Inc.
851 Walnut Street
Hamilton, Ohio 45012-5005

Tel. No.: 513-863-1200

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. City of Portsmouth, New Hampshire, et. al., relating to the Coakley Landfill Superfund Site.

FOR Public Service Company of New Hampshire

Date: 9/27/91

Name: Earl G. Legacy
Title: Vice President
Address: P.O. Box 330
Manchester, NH 03105

Tel. No.: (603) 634-2592

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name: Karen J. Emery, Esquire
Title: Corporate Counsel, Public Service Company of New Hampshire
Address: P.O. Box 330 , 1000 Elm Street
Manchester, NH 03105

Tel. No.: (603) 634-2964

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. City of Portsmouth, New Hampshire, et. al., relating to the Coakley Landfill Superfund Site.

FOR R.M. Philbrick Trucking Co., Inc.

Date: September 27, 1991

Richard M. Philbrick Sr.

Name: Richard M. Philbrick, Sr.
Title: Principal
Address: 354 Central Road
Rye, NH 03870

Tel. No.: (603) 964-5486

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name: Same as Above
Title:
Address:

Tel. No.:

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. City of Portsmouth, New Hampshire, et. al., relating to the Coakley Landfill Superfund Site.

FOR S&H Precision Mfg. Co., Inc.

Date: 9/26/91

Maureen K. Baldwin

Name: Maureen K. Baldwin
Title: Assist. Clerk
Address: 10 Forbes Rd.
Newmarket, N.H. 03857

Tel. No.: 603-659-8323

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name: George A. Hall, Jr.
Title: Anderson & Kreiger
Address: 33 Mount Vernon St.
Boston, Ma. 02108

Tel. No.:

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. City of Portsmouth, New Hampshire, et. al., relating to the Coakley Landfill Superfund Site.

FOR SAEF LINCOLN MERCURY, INC. d/b/a GOSS LINCOLN MERCURY ISUZU

Date: 10/3/91

Name: RAYMOND D. GOSS
Title: PRESIDENT
Address: P.O. Box 5007, 2355 LAFAYETTE ROAD
PORTSMOUTH, NH 03801

Tel. No.: (603) 431-7000

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name: THOMAS M. KEANE, ESQ.
Title: SECRETARY
Address: P.O. BOX 477, ONE CATE STREET
PORTSMOUTH, NH 03802-0477

Tel. No.: (603) 436-6500

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. City of Portsmouth, New Hampshire, et. al., relating to the Coakley Landfill Superfund Site.

FOR Sanel Auto Parts, Inc.

Date: September 27, 1991

Name: George I. Segal
Title: President
Address: P.O. Box 1254, 129 Manchester St.
Concord, NH 03301

Tel. No.: 603-225-4000

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name: Robert E. Dastin, Esq.
Title: Registered Agent/Secretary
Address: Sheehan Phinney Bass + Green, P.A.
1000 Elm Street, P.O. Box 3701
Manchester, NH 03105-3701

Tel. No.: 603-668-0300

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. City of Portsmouth, New Hampshire, et. al., relating to the Coakley Landfill Superfund Site.

FOR SEACOAST VOLKSWAGEN, INC.

Date: SEPTEMBER 27, 1991

Name: ROBERT S. CIESZYNSKI
Title: PRESIDENT
Address: SEACOAST VW, INC.
180 SPAULDING TURNPIKE
PORTSMOUTH, NH 03801

Tel. No.: (603) 436-6900

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name: THOMAS G. FIORE, ESQ.
Title: MORRISON, MAHONEY & MILLER
Address: 250 SUMMER ST.
BOSTON, MA 02210

Tel. No.: (617) 439-7500

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. City of Portsmouth, New Hampshire, et. al., relating to the Coakley Landfill Superfund Site.

FOR Simplex Wire & Cable Company

Date: September 27, 1991

Name: Irving Gutin
Title: Secretary
Address: One Tyco Park
Exeter, New Hampshire 03833

Tel. No.: 603/778-9700

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name: CT Corporation System
Title:
Address: Two Oliver Street
Boston, Massachusetts 02109

Tel. No.: 617/482-4420

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. City of Portsmouth, New Hampshire, et. al., relating to the Coakley Landfill Superfund Site.

FOR UNITED TECHNOLOGIES CORPORATION
Pratt & Whitney

Date: September 26, 1991

Name: Thomas C. Baum
Title: Plant Manager
Address: Route 9 Wells Road
North Berwick, ME 03906

Tel. No.: (207)676-2468

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name: Robert A. Argazzi
Title: Associate Counsel
Address: Legal Department, Mail Stop 132-12
Pratt & Whitney
400 Main Street
East Hartford, CT 06108
Tel. No.: (203)565-4944

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. City of Portsmouth, New Hampshire, et. al., relating to the Coakley Landfill Superfund Site.

FOR Waste Management of Maine, Inc., f\k\a SCA Services of Maine, Inc., f\k\a Sanitas Waste Disposal of Maine, Inc., f\k\a Sanitation Services, Inc. d/b/a Truk-Away

Date: September 26, 1991

Stephen T. Joyce

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Name: David M. Jones, Esq.
Title: N.A.
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Boston, MA 02110
Tel. No.: (617) 261-3125

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. City of Portsmouth, New Hampshire, et. al., relating to the Coakley Landfill Superfund Site.

FOR Waste Management of New Hampshire, Inc. f\k\a SCA Services of New Hampshire, Inc., f\k\a Sanitas Waste Disposal of New Hampshire, Inc., f\k\a Truk-Away Corporation, individually and as successor to Lakes Region Disposal Co., Inc. and as alleged successor to Coastal Environmental Systems, Inc.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION I

J.F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203-2211

DECLARATION FOR THE RECORD OF DECISION

Coakley Landfill
North Hampton, New Hampshire

STATEMENT OF PURPOSE

This decision document represents the selected remedial action for the Coakley Landfill Site in North Hampton, New Hampshire, developed in accordance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986, and to the extent practicable, the National Oil and Hazardous Substances Contingency Plan (NCP), 40 CFR Part 300 et seq., as amended. The Region I Administrator has been delegated the authority to approve this Record of Decision.

The State of New Hampshire has concurred on the selected remedy.

STATEMENT OF BASIS

This decision is based on the Administrative Record which has been developed in accordance with Section 113 (k) of CERCLA and which is available for public review at the North Hampton Public Library in North Hampton, New Hampshire and at the Region I Waste Management Division Records Center in Boston, Massachusetts. The Administrative Record Index (Appendix E to the ROD) identifies each of the items comprising the Administrative Record upon which the selection of the remedial action is based.

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to the public health or welfare or to the environment.

DESCRIPTION OF THE SELECTED REMEDY

This ROD sets forth the selected remedy for the first operable unit (OU) at the Coakley Landfill Site, which addresses source control to meet onsite cleanup goals. A second ROD will follow addressing the management of migration, the second operable unit. The source control operable unit one will consist of a multi-task remedy.

The remedial measures for the first OU described in this ROD will protect the drinking water aquifer by minimizing further migration of contaminants to the groundwater and surface water, and will eliminate threats posed by direct contact with or ingestion of contaminated soils and wastes at the Site.

The major components of the selected remedy include:

- Consolidation of the solid waste;
- Consolidation of sediment in wetlands;
- Capping of the landfill;
- Collection and treatment of landfill gases;
- Groundwater extraction and treatment;
- Long-term environmental monitoring; and
- Institutional controls where possible.

DECLARATION

The selected remedy is protective of human health and the environment, attains Federal and State requirements that are applicable or relevant and appropriate for this remedial action and is cost-effective. This remedy satisfies the statutory preference for remedies that utilize treatment as a principal element to reduce the toxicity, mobility, or volume of hazardous substances. In addition, this remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable.

As this remedy will result in hazardous substances remaining onsite above health-based levels, a review will be conducted within five years after commencement of remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

June 28, 1990
Date

Julie Belaga
Julie Belaga
Regional Administrator
U.S. EPA, Region I

RECORD OF DECISION
COAKLEY LANDFILL SITE

TABLE OF CONTENTS

ROD DECISION SUMMARY

June 1990

I. SITE NAME, LOCATION AND DESCRIPTION

A. General Description

The Coakley Landfill Site (the Site) is situated on approximately 92 acres located within the Towns of Greenland and North Hampton, Rockingham County, New Hampshire (Appendix A, Figure 1). The actual landfill area covers approximately 27 acres of this property. The Site 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. Vehicles access the Site through an entrance gate located on Breakfast Hill Road, approximately 600 feet northwest of the intersection of Lafayette and Breakfast Hill Roads. The Greenland-Rye town line forms a major portion of the eastern boundary of the Site. A more detailed Site map is shown on Appendix A, Figure 2. There is a more complete description of the Site in the Remedial Investigation Report in Chapter 2, Pages 2-1 to 2-6.

Breakfast Hill Road forms the northern boundary of the Site. Privately owned properties border the Site to the west and north and include both farmland and undeveloped woodlands and wetlands. Properties abutting east and south of the Site are generally commercial or residential. The Rye Landfill, which was closed in 1987, abuts the Site directly to the northeast. The Lafayette Terrace housing development is directly southeast of the Site. The Granite Post Green Mobile Home Park lies approximately 500 feet to the south of the Site, west of Lafayette Terrace. The Boston & Maine Railroad, which runs north-south, forms the western border of the southern half of the Site.

The landfill is situated within the southernmost portion of the Site, almost completely within the Town of North Hampton. The Coakley Landfill covers approximately 27 acres, constituting the major portion of the southern section of the Site. Generally rectangular in shape, with an average width of approximately 900 feet and an average length of approximately 1,300 feet, the landfill extends to the western, southern, and eastern boundaries in the south direction.

The landfill forms a hill rising approximately 10 to 60 feet above the surrounding area. At its highest point the elevation is about 137 feet above mean sea level. Ground surface in the landfill area originally sloped gently westward. The landfill now forms a prominent raised plateau in that area, with a generally flat upper

surface. The landfill has moderately steep slopes along its western, eastern, and southern sides, and a gentle slope along the northern side.

Fine, sandy soil of variable thickness covers most of the landfill, and vegetative cover is essentially nonexistent. Along the top of the northern and western slopes, incinerator residue is visible in banks where wind and water action apparently removed the sand cover. A drainage bounds the southern and western sides of the landfill, channeling surface water runoff into a wetland area situated immediately to the north-northwest of the landfill. The wetland area generally extends from the northwest corner of the landfill area, along both sides of the B&M Railroad, to a point approximately 500 feet south of Breakfast Hill Road, The margins of the wetlands adjacent to the landfill have been partially filled with rock removed from the quarry and some native sand and gravel. Wetlands west of the railroad track drain both the north and the south. The landfill is located on a subregional drainage divide and contributes runoff in a generally radial pattern into the watersheds of four nearby streams west of the Site: Little River, Berry's Brook, North Brook, and Bailey Brook (Appendix A, Figure 2).

Natural resources in the area include the agricultural lands, woodlands, and wetlands which surround the Site. Surface water bodies feed the wetland area. The groundwater is available in aquifers formed by water saturated portions of sand and gravel deposits and in fractured bedrock. Sand and gravel deposits are found throughout the Site. Some bedrock outcrops were mined for crushed aggregate in a quarry operation. It is reasonable to expect that wetland and stream areas receive some hunting and fishing activity. This is considered minor recreational use. There is also occasional use of all-terrain recreational vehicles on and around the Site.

B. Geologic Characteristics

Portions of the landfill Site directly on fractured bedrock of the Rye Formation or on an undetermined thickness of unconsolidated sediments of the Pleistocene age. Bedrock consists of deformed igneous and metamorphic metasediments of the Precambrian to Ordovician Age intruded locally by pegmitites of the Hillsboro plutonic series.

Onsite drilling and geophysical work indicated the bedrock surface is irregular and appears to form a northeast/southwest ridge beneath the landfill.

Surficial geology in the Site vicinity varies from ice contact sand and gravel deposit on the easterly side of the landfill to marine sandy silt on the westerly side. Ice contact deposits also appear

to overlie the marine sediments on the northeastern side of the landfill.

The overburden materials onsite vary in thickness from three feet to almost fifty feet and grade from highly permeable sands and gravels to stiff, low permeability sandy silt.

C. Hydrogeological Characteristics

The generalized groundwater hydraulics of the Coakley Landfill Site are presented in Appendix A, Figure 3. Both the direction and magnitude of the hydraulic gradients appears to be similar in the overburden and bedrock units. In addition, the data suggest that the overburden is recharging bedrock over the topographic high area east of the Coakley Landfill, and that bedrock is discharging into the overburden in the wetlands area.

The primary directions of groundwater flow from the Coakley Landfill are southwest, west and northwest toward the wetlands. In the wetlands, an inferred east to west groundwater divide directly west of the landfill causes groundwater to flow south toward North Road and presumably north toward Breakfast Hill Road. Residential and commercial pumping, occurring prior to the installation of public water supplies, altered the natural hydraulic system shown in Appendix A, Figure 3. EPA interprets this pumping to be the primary reason for contaminant migration south, east, and northeast of the landfill. As of the last round of water level measurements on September 1987, essentially no hydraulic gradient was present from the Coakley Landfill toward the south, east, or northeast, including toward or from the Rye landfill.

Overburden groundwater flow appears to be radial from the Coakley Landfill and vertically downward into the bedrock aquifer. Surface drainage is also multidirectional since the landfill is near the headwaters of Berry's Brook to the north and the Little River to the south. Flow within the bedrock aquifer is a function of interconnected fractures and is affected locally by hydraulic gradients induced by bedrock water well usage within the area. At least one major fracture system positioned in a south/southeast direction has been documented to interconnect with the Coakley Landfill. This is located in the south/southwest boundary where substantial recharge to the bedrock aquifer may be occurring.

Groundwater recharge from the overburden to the bedrock aquifer occurs where overburden water levels are higher in elevation than those in bedrock and fine grained materials do not prohibit this recharge. Direct leachate discharge to the bedrock may take place beneath parts of the landfill, since the refuse is in direct contact with bedrock in areas where rock quarrying had previously occurred.

II. Site HISTORY AND ENFORCEMENT ACTIVITIES

A. Land Use

In approximately 1965 sand and gravel operations began on the Coakley property, which had previously consisted of wooded areas and open fields as evidenced by aerial photographs. These operations continued into the late 1970s.

Permitting for a landfill began in 1971 when the New Hampshire Department of Public Health granted the Town of North Hampton a permit to operate a landfill on the Coakley Site. Early in 1972, Coakley Landfill, Inc. and the Towns of North Hampton and the City of Portsmouth entered into an agreement which prohibited the dumping of shop and ordnance waste from Pease Air Force Base, located in Newington, NH, as well as demolished buildings, junk autos, machinery, and large tree stumps or butts.

Landfill operations began in 1972, with the southern portion of the Site used for refuse from the municipalities of Portsmouth, North Hampton, Newington, and New Castle, along with Pease Air Force Base. Coincident 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 sand and gravel mining.

In 1978 and 1979 oil-soaked debris from accidents in Portsmouth and Newington, was placed in what is known as the Oily Debris Area in the northern section of the Coakley Site (Appendix A, Figure 2). The precise volume of this material is unknown.

In 1981, the State of New Hampshire granted the Town of North Hampton permission to dispose of pesticide waste containers at the Coakley Landfill Site.

After the City of Portsmouth began operating a refuse-to-energy plant on leased property at Pease Air Force Base in 1982. From July 1982 through July 1985, Pease Air Force Base and the municipalities of Rye, North Hampton, Portsmouth, New Castle, and Derry began transporting their refuse to this plant for incineration. After that time, the Coakley Landfill generally accepted only incinerator residue from the new plant. In March 1983, the Bureau of Solid Waste Management ordered an end to the disposal of unburned residue at the Coakley Landfill.

Prior to incineration, the New Hampshire Waste Management Division estimated that approximately 120 tons per day were disposed of at

the landfill. The daily weight of incinerator residue was estimated to be approximately 90 tons. A more detailed description of the Site history can be found in the Remedial Investigation Report at pages 1-6 through 1-10.

B. Response History

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 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 from 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. The WSPCC submitted proposals to the U.S. Environmental Protection Agency (EPA) in May and October of 1983 recommending that the Coakley Site be included on the National Priority List (NPL). In December 1983, the Coakley Landfill was listed on the NPL, and ranked as No. 689.

In July 1985, after additional investigation conducted by the EPA and the WSPCC, the Coakley Landfill ceased operations. The nearby Rye Landfill ceased operations in 1987.

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 which contains EPA's preferred alternative was released with the FS.

C. Enforcement History

The State of New Hampshire began discussions concerning the Site with Coakley, the owner, and with the municipalities as early as December, 1983. Information request letters were sent by EPA to these parties in September and October, 1987. Additional

information request letters were sent to approximately 300 parties during 1988.

On February 2, 1990, EPA notified approximately 59 parties who either owned or operated the facility, generated wastes that were shipped to the facility, arranged for the disposal of wastes at the facility, or transported wastes to the facility of their potential liability with respect to the Site. The PRPs formed a steering committee and initial negotiations are taking place. On March 14, 1990 EPA met with the potential responsible parties (PRPs) to discuss their potential liability at the Site.

Soon after the PRPs were noticed the City of Portsmouth, the Town of North Hampton and the Town of Newington notified the EPA of their suspicions that additional parties also dumped at the Coakley Site. These additional 126 parties were informed by letter that EPA may notice them in the future. Copies of the Proposed Plan was sent to parties to provide them with an opportunity to comment on the EPA's Preferred Remedial Alternative.

The PRPs have been active in the remedy selection process for this Site. The steering committee retained a technical consultant to review the RI/FS and to evaluate EPA's preferred alternative. The Coakley Landfill Steering Committee submitted technical comments to the EPA during the public comment period. Responses to these comments as well as comments from other members of the public are summarized in the attached Responsiveness Summary.

III. COMMUNITY RELATIONS

Throughout the Site's history, community concern and involvement has been high. EPA and the State have kept the community and other interested parties appraised of the Site activities through informational meetings, fact sheets, press releases and public meetings.

During January 1986, EPA released a community relations plan which outlined a program to address community concerns and keep citizens informed about and involved in activities during remedial activities. On May 14, 1986, EPA held an informational meeting at the North Hampton Town Hall, North Hampton, New Hampshire to describe the plan for the RI/FS. On November 3, 1988, EPA held an informational meeting at North Hampton Town Hall, North Hampton, New Hampshire to discuss the results of the Remedial Investigation (RI).

On May 10, 1988, EPA made the administrative record available for public review at EPA's offices in Boston and at the North Hampton Public Library. Additional materials were added to the Administrative Record on October 31, 1988 with release of the RI and on March 2, 1990 with release of the FS and the Proposed Plan.

Comments on the RI were received from Coakley, the Town of Newcastle and the City of Portsmouth. EPA published a notice and brief analysis of the Proposed Plan in Foster's Daily Democrat and in the Portsmouth Herald on March 9, 1990 and made the plan available to the public at the North Hampton Public Library.

On March 15, 1990, EPA held an informational meeting at the North Hampton Elementary School to discuss the results of the Remedial Investigation and the cleanup alternatives presented in the Feasibility Study and to present the Agency's Proposed Plan. Also during this meeting, the Agency answered questions from the public. From March 16 to May 14, 1990, the Agency held a 60-day public comment period to accept public comment on the alternatives presented in the Feasibility Study and the Proposed Plan and on any other documents previously released to the public. On April 3, 1990, the Agency held a public meeting at the North Hampton Elementary School to discuss the Proposed Plan and to accept any oral comments. A transcript of this meeting and comments from the general public and from the Coakley Landfill Steering Committee along with the Agency's response to comments are included in the attached Responsiveness Summary.

EPA has met with the potentially responsible parties at various times during the process to discuss the Site. More specifically, EPA met with the City of Portsmouth in February, 1988, with several municipalities involved with the Site in the Fall of 1989, and with the Coakley Landfill Steering Committee chairs in April, 1990.

IV. SCOPE AND ROLE OF THE RESPONSE ACTION

The selected remedy is the first operable unit of at least a two operable unit approach to the remediation of the Site and provides for the remediation of the source at the Coakley Site including the contaminated groundwater beneath and in the vicinity of the landfill (i.e., source control). The second operable unit will address any groundwater contamination which has migrated from the landfill and beyond the property boundary (i.e., management of migration). During this phase additional studies will be undertaken to better characterize the nature and extent of this offsite groundwater contamination and to develop and evaluate alternatives for remediation should it be required. The presence of a plume of low level contamination currently exists in the bedrock under the wetlands beyond the property boundary to the west of the Site. An environmental assessment will be performed at that time.

This first operable unit will address the following principal threats to human health and the environment posed by the Site:

1. The offsite migration of contaminants;

2. The future ingestion of contaminated groundwater offsite; and

3. The direct contact with contaminated soils, sediments and solid waste.

V. SITE CHARACTERISTICS

Chapter 1.0 of the "Draft Feasibility Study, Coakley Landfill", May 1989, contains an overview of the Remedial Investigation (RI). The study area, as defined in the RI, includes the land from about 1,600 feet to the south of North Road to about 1,600 feet north of Breakfast Hill Road and about 4,000 feet to the east and west of Lafayette Road. This study area is substantially larger than the Coakley Landfill Site itself in order to evaluate the extent of the contaminant migration. The significant findings of the RI are summarized below. Also shown is a summary of the hazardous substances found at the Site which are subject to Superfund remedial actions. A complete discussion of Site characteristics can be found in the Remedial Investigation Report at pages 7-1 through 7-44.

A. Air

Qualitative outdoor air sampling done at the Site detected low concentrations of some volatile organic compounds (VOCs). Observed concentrations ranged from 'not detected' to 48 parts per billion (ppb or ug/L). Also, data obtained from another survey instrument, an AID Model 580 organic vapor meter, during the initial Site walkover of the RI did not indicate VOCs above the background level that was set approximately 1/2 mile from the Site.

In 1986, the WSPCC conducted indoor air monitoring of three homes at Lafayette Terrace. Several VOC's were detected, but the concentrations were typical of those found in residential dwellings. Nevertheless, the concentrations of VOCs ranged from below measurable limits up to approximately 22 ppb. These results are below the outdoor air VOC concentrations at the landfill perimeter.

B. Soil

In soils below the surface of the landfill, laboratory and field analyses found VOCs, pesticides, metals and acid and base/neutral extractable compounds (ABNs), above detection limits. Soil samples were screened from nine test pits located at the landfill (Appendix A, Figure 4). Specific detected VOC's include tetrachloroethylene, ethylbenzene, acetone, chloromethane, and dichloromethane. Total

VOCs in the samples from the nine test pits ranged from minimal detection to 178 ppb. Phenanthrene, anthracene, flouroanthrene, benzo(a)anthracene, chrysene, benzo(k)-floranthrene, benzo(a)pyrene, fluorene, naphthalene, 4-methylphenol, and various phthalates were among the ABNs detected in several of the test pit samples, particularly at test pits TP-11 and TP-18. Pesticide compounds identified above their detection limits included 4,4'-DDD and 4,4'-DDT. No PCBs were observed at levels above the detection limits of the instruments used. Arsenic, cadmium, lead, mercury, iron, manganese, and zinc were among the trace metals that exceeded background levels at various test pits within the landfill.

Twelve (12) soil borings were sampled and screened for VOC's in and around the landfill. The highest concentration was observed in GZ-106 which was bored in the landfill with a total VOC concentration of 17 ppm. The VOC's observed include: tetrahydrofuran, benzene, methyl ethyl ketone (MEK), toluene, xylenes and chlorobenzene.

The principal route of offsite migration of these contaminants is from soil leaching into the groundwater. Because soils were sampled below the surface, migration from volatilization of chemical compounds and from wind and water erosion is unlikely.

C. Sediments

Sediment samples were obtained for quantitative chemical analyses at nine sampling points (Appendix A, Figure 5). Laboratory and field analyses performed were VOCs, pesticides/pcb, metals and acid and base/neutral extractable compounds (ABNs). Sediments with detectable limits of contaminants were observed within the Little River wetlands, and within the Berry's Brook wetland and at a location downstream in Berry's Brook.

The highest measured total VOC concentration in a surface sediment sample was located in the wetlands immediately adjacent to the northwest corner of the Site which is considered part of Berry's Brook wetland. Leachate breakout and eroded soils from the temporary cap of the landfill can be seen at this location. The predominant VOC's detected were acetone (300 ppb), ethylbenzene (240 ppb), xylene (140 ppb), and chlorobenzene (89 ppb). The total ABN concentration within this sediment sample was less than 123 ppb. The metals detected at this location included arsenic (46 ppm), chromium (57 ppm) and nickel (33 ppm).

D. Surface Water

Two rounds of surface water samples were taken at eight sampling station locations during the RI (Appendix A, Figure 5). Laboratory

and field analyses were performed for VOCs, pesticides/PBCs, metals and acid and base/neutral extractable compounds (ABN's).

Surface waters sampled in the vicinity of the Coakley Landfill indicated the presence of VOCs and elevated levels of metals. Overall, VOCs were detected in surface water samples at two of the eight locations, namely S-10 (Berry's Brook at Breakfast Hill Road) and S-11 (Berry's Brook, at the northwest corner of the Site). These VOCs, also detected in the landfill leachate, consist of six VOCs: toluene, MEK, MIBK, diethyl ether, tetrahydrofuran, and acetone.

The highest total VOC concentrations were observed in Berry's Brook, immediately northwest of the Coakley Landfill (sample location S-11), where total VOCs in the range of 459 ppb were detected. Data from the March 1987 sampling round indicate that tetrahydrofuran was detected at S-10 and S-11 at concentrations of 12 ppb and about 50 ppb, respectively. Data from the 1984 sampling round indicate that toluene, acetone, tetrahydrofuran, MEK and MIBK were detected at S-10 and S-11 at less than 10 ppb and 29 ppb, 89 ppb and 185 ppb, 11 ppb and 31 ppb, 130 ppb and 176 ppb, and 10 ppb and 19 ppb, respectively.

Southwest of Coakley Landfill, surface water samples obtained from the Little River (sample location S-1) by New Hampshire Department of Environmental Services (NH DES) in 1983 also indicated the presence of six VOCs consisting of toluene, acetone, trichloromethane, trichloroethylene, tetrachloroethylene, and tetrachloroethane, with a maximum observed total VOC concentration of 102 ppb.

Numerous metals at or above anticipated background levels were detected in samples obtained at stations S-10 and S-11. Elevated levels of aluminum were detected in a sample obtained from station S-16 located approximately 4,000 feet downstream of station S-10. The metal contaminants detected include iron, aluminum, barium, manganese and potassium. Measured maximum level of these contaminants are 100 ppm, 2.1 ppm, 0.23 ppm, 29.7 ppm and 25 ppm, respectively. Inorganic parameters included: iron (100 ppm), manganese (5.8 ppm), COD (40.6 ppm) and chloride (185 ppm). Since aluminum concentrations were high at stations located at headwaters of Little River (S-7 and S-17), these elevated levels could be from naturally high aluminum levels or an alternate source.

E. Groundwater

Observed Contaminants in the Overburden Hydrogeological Unit

Groundwater samples were obtained from 23 overburden monitoring wells in the study area (Appendix A, Figure 6). Concentrations of total VOCs detected in seven monitoring wells located within and

along the border of the Coakley Landfill ranged from 600 ppb (MW-1, MW-2) to 10,000 ppb (MW-3D). Commonly observed VOCs detected in these overburden wells and the observed concentration ranges detected were as follows:

COMPOUND	CONCENTRATION (PPB)
benzene	6-60.6
ethyl benzene	18-499
chlorobenzene	less than 5-182
toluene	21-1200
acetone	14-2800
methyl ethyl ketone	17-2700
methyl isobutyl ketone	11-1130
tetrahydrofuran	16-1650
diethyl ether	12-198.8
1,1-dichloroethane	7.3-20.8
1,2-dichloroethane	less than 5-72
1,2-dichloropropane	30
trans-1,2-dichloroethylene	11-16

Metals detected in these same seven overburden wells and their detected concentration ranges are presented below.

COMPOUND	CONCENTRATION
aluminum	152-337 ppb
barium	243-368 ppb
chromium	330 ppb
iron	21,000-280,000 ppb
manganese	2,620-27,000 ppb
nickel	122-200 ppb
potassium	16,000-480,000 ppb
sodium	1,000,000-1,460,000 ppb
arsenic	10-89 ppb
vanadium	23-45 ppb

Observed Contaminants in the Bedrock Hydrogeological Unit

Groundwater samples were obtained from 37 bedrock monitoring and bedrock domestic wells within the study area. Bedrock monitoring wells are those installed outside of the landfill itself by EPA and the State of New Hampshire. Bedrock domestic wells are also located offsite and are either current or past commercial and residential drinking water sources. Highest measured total VOC concentrations within the bedrock wells were detected in samples obtained from MW-5, MW-6 around the southern perimeter of the landfill and in GZ-105 located approximately 800 feet offsite in a westerly direction. Maximum total VOC concentrations were less than 2,400 ppb, 97 ppb and less than 807 ppb, respectively. Individual compounds comprising the bulk of the observed constituents in both the monitoring and domestic bedrock wells and the observed concentration ranges detected were as follows:

COMPOUND	CONCENTRATION
benzene	5.2-12.8 ppb
chloroethane	294 ppb
toluene	125-1,340 ppb
diethyl ether	180-350 ppb
methyl ethyl ketone	170-407 ppb
methyl isobutyl ketone	85-96 ppb
tetrahydrofuran	238-715 ppb
acetone	16-437 ppb
xylene	21-87 ppb
ethyl benzene	less than 34 ppb
1,1-dichloroethane	7-47 ppb

VOCs were detected in bedrock domestic wells located offsite to the southeast at Lafayette Terrace (R-25, R-26 and R-28). Observed total VOCs concentrations ranged from none detected (R-28) to less than 1,445 ppb (R-25). Observed compounds in these wells were similar to those observed within the offsite bedrock wells.

Metals detected in the bedrock monitoring and domestic wells located throughout the study area of the Coakley Landfill and the observed concentration ranges detected were as follows:

COMPOUND	CONCENTRATION
aluminum	119-200 ppb
barium	12-269 ppb
iron	14-140,000 ppb
manganese	100-120,000 ppb
nickel	8-65 ppb
potassium	2500-190,000 ppb
sodium	15,000-720,000 ppb
arsenic	5-9.6 ppb
vanadium	5-49 ppb

Monitoring Reports Previous to the RI

Groundwater samples collected prior to the RI from onsite monitoring wells in bedrock, overburden and from offsite residential drinking water supply wells indicated the presence of VOCs and are reported in the New Hampshire Water Supply and Pollution Control Commission (NHWS&PCC), "Hydrogeological Investigation of the Coakley Landfill Site". Ten VOCs were frequently detected in onsite and offsite wells, (toluene, MEK, diethyl ether, tetrahydrofuran, xylenes, ethylbenzene, dichlorobenzene, benzene, 1,1-dichloroethane and 1,2-dichloroethylene).

F. Summary of Contamination and Affected Media

Samples of surface water, stream sediment, soil, groundwater and air were obtained from the study area for evaluation of possible chemical contamination. Five basic types of chemical analyses were

performed on samples from various environmental media (excluding air). These analyses included methods for the detection of VOCs ABNs, metals, PCBs and pesticides and analyses for several other parameters considered to be indicators of landfill leachate.

In general, VOCs and metals were observed to be the predominant contaminants in the study area. The highest contaminant concentrations were typically detected within samples obtained from test pits, surface water/sediment stations, and monitoring wells located within the Coakley Landfill or in the portion of the Little River and Berry's Brook wetlands immediately west of the landfill. Analyses of environmental samples obtained elsewhere in the study area typically indicated significantly diminished contaminant levels.

Hydrogeological and water quality data indicate that contaminated groundwater has migrated radially from the Coakley Landfill in both overburden and bedrock hydrogeologic units. Although contaminants detected within samples obtained in the Site study area include VOCs, ABNs, PCBs, metals and inorganic; VOCs and metals were generally observed with the greatest frequency and distribution.

In general, VOCs are fairly mobile in groundwater and can expect to be transported in the natural flow of the overburden and bedrock groundwater. Although metals are usually considered fairly immobile they can become dissolved in the groundwater especially where bio-chemical changes in waste materials produce gross changes in groundwater geochemistry. Therefore, metal constituents in the groundwater beneath the Site can be transported with the natural flow of the overburden and bedrock groundwater.

Currently, the majority of this groundwater contamination is localized under the landfill in the overburden and bedrock hydrogeological units. However, prior to the introduction of public water, significant levels of contaminants, particularly VOC's, were found in the private water supply wells in the vicinity of the Coakley Landfill and particularly in the Lafayette Terrace area. This suggests that if the pumping wells for private water supply were reintroduced into this area, contaminants would once again be drawn out from under the landfill, potentially exceeding safe drinking water standards.

Although numerous contaminants were identified throughout the landfill, no areas were identified which could be considered "hot spots" (areas of high concentrations of contaminants) where special source control measures could be warranted.

VI. SUMMARY OF SITE RISKS

A risk assessment (RA) was performed to estimate the probability and magnitude of potential adverse human health effects from

exposure to contaminants associated with the Site. The public health risk assessment followed a four step process: 1) contaminant identification, which identified those hazardous substances which, given the specifics of the site, were of significant concern; 2) exposure assessment, which identified actual or potential exposure pathways, characterized the potentially exposed populations, and determined the extent of possible exposure; 3) toxicity assessment, which considered the types and magnitude of adverse human effects associated with exposure to hazardous substances, and 4) risk characterization, which integrated the three earlier steps to summarize the potential and actual risks posed by hazardous substances at the Site, including carcinogenic and noncarcinogenic risks. The results of the public health risk assessment for the Coakley Landfill Site are discussed below.

Seventeen contaminants of concern, listed in Appendix B, Tables 1 through 5, were selected for evaluation in the RA. These contaminants constitute a representative subset of the more than thirty-two contaminants identified at the Site during the Remedial Investigation. As shown in these tables, the seventeen contaminants of concern were selected to represent potential Site-related hazards based on toxicity, concentration, frequency of detection, and mobility and persistence in the environment. A summary of the health effects of each of the contaminants of concern can be found in Section 8, Pages 8-1 to 8-18 of the Risk Assessment.

Potential human health effects associated with exposure to the contaminants of concern were estimated quantitatively through the development of several hypothetical exposure pathways. These pathways were developed to reflect the potential for exposure to hazardous substances based on the present uses, potential future uses, and location of the Site. The following is a brief summary of the exposure pathways evaluated. A thorough discussion of exposure pathways and parameters can be found in Section 7.3 and 8.3 of the Risk Assessment. For incidental ingestion and direct contact of contaminated soil, the health risk was evaluated for a child between the ages of five and 18 years old who may be exposed to contaminated soils ten times per year for 14 years. For ingestion of groundwater used as a drinking water supply, the health risk was evaluated for an adult who may consume two liters per day for seventy years. For incidental ingestion and dermal absorption of surface water, the health risk was evaluated for a child between the ages of five and 18 years old who may accidently ingest or bathe in contaminated surface water once each year. For incidental ingestion and dermal absorption of sediments, the health risk was evaluated for a child between the ages of five and 18 years old who may accidently ingest or cover his or her self in contaminated sediment once a year. For each pathway evaluated, an exposure estimate was generated corresponding to exposure to the average concentration detected in that particular medium.

Excess lifetime cancer risks were determined for each exposure pathway by multiplying the exposure level with the chemical specific cancer potency factor. Cancer potency factors have been developed by EPA from epidemiological or animal studies to reflect a conservative "upper bound" of the risk posed by potentially carcinogenic compounds. That is, the true risk is very unlikely to be greater than the risk predicted. The resulting risk estimates are expressed in scientific notation as a probability (e.g. 1×10^{-6} for 1/1,000,000) and indicate (using this example), that an individual is not likely to have greater than a one in a million chance of developing cancer over 70 years as a result of Site-related exposure as defined to the compound at the stated concentration. Current EPA practice considers carcinogenic risks to be cumulative when assessing exposure to a mixture of hazardous substances.

The hazard index was also calculated for each pathway as EPA's measure of the potential for noncarcinogenic health effects. The hazard index is calculated by dividing the exposure level by the reference dose (RfD) or other suitable benchmark for noncarcinogenic health effects. Reference doses have been developed by EPA to protect sensitive individuals over the course of a lifetime. They reflect a daily exposure level that is likely to be without an appreciable risk of an adverse health effect. RfDs are derived from epidemiological or animal studies and incorporate uncertainty factors to help ensure that adverse health effects will not occur. The hazard index is often expressed as a single value (e.g. 0.3) indicating the ratio of the stated exposure as defined to the reference dose value (for this example of 0.3, the exposure as characterized is approximately one third of an acceptable exposure level for the given compound). The hazard index is only considered cumulative for compounds that have the same or similar toxic endpoints (the hazard index for a compound known to produce liver damage should not be added to a second whose toxic endpoint is kidney damage).

Table 6 below, depicts the cumulative risk summary for the carcinogenic and non-carcinogenic contaminants of concern for each exposure pathways analyzed. For a more detailed analysis on the risk for each contaminant of concern, see Tables 79 through 87 of the Remedial Investigation.

TABLE 6

CUMULATIVE CARCINOGENIC RISK ESTIMATES AND CUMULATIVE HAZARD INDICES BY EXPOSURE PATHWAY

Exposure Pathway	Cumulative Excess Lifetime Cancer Risk		Cumulative Hazard Index	
	Maximum	Average	Maximum	Average
Incidental Ingestion of Soils		9×10^{-9}		8×10^{-5}
Direct Contact (DC) with Soils		4×10^{-7}		3×10^{-3}
Ingestion of Groundwater (GW)	1×10^{-3}	2×10^{-4}	2×10^{-1}	5×10^{-2}
Ingestion of GW - Well 43		1×10^{-4}		1×10^{-1}
Ingestion of GW - Lafayette Terrace		5×10^{-4}		2×10^{-6}
DC with Surface Water (SW)		5×10^{-9}		7×10^{-5}
Incidental Ingestion of SW		3×10^{-10}		2×10^{-4}
DC with Sediment		4×10^{-8}		2×10^{-1}
Incidental Ingestion of Sediment		4×10^{-9}		6×10^{-4}

Cumulative potential cancer risks associated with incidental ingestion and direct contact with onsite soils, surface water, and sediments did not exceed EPA's target cancer risk range of 10^{-4} to 10^{-6}. Similarly, cumulative hazard indices as a measure of the potential for non-carcinogenic effects for each of the above exposure pathways did not exceed unity (1.0).

Potential risks associated with the ingestion of groundwater as a drinking water supply were estimated based on data from overburden/bedrock monitoring wells and domestic wells at Lafayette

Terrace and domestic well No. 43. These wells were located within the same hydrogeologic regime (i.e., between the same groundwater divides). The cumulative excess lifetime cancer risk predicted for the consumption of groundwater moving from overburden and bedrock monitoring wells exceeded EPA's target risk range of 10^{-4} to 10^{-6}. The principle contribution to these risk estimates was posed by arsenic whose maximum concentration 89 ug/L exceeded the Maximum Contaminant Levels of the Safe Drinking Water Act (MCLs) of 50 ug/L. Arsenic was also the major contributor to possible cancer risks for the ingestion of groundwater from monitoring wells in the vicinity of well 43 and monitoring wells in the vicinity of Lafayette Terrace. Predicted cancer risk for consumption of groundwater from monitoring wells in the vicinity of Lafayette Terrace also exceeded the 10^{-4} to 10^{-6} cancer risk range.

The cumulative hazard indices for each of the groundwater pathways evaluated were less than one indicating that the potential for non-cancer health effects resulting from exposure to contaminants in groundwater is unlikely.

Risks from the air pathway of exposure were not quantified because observed contaminant levels were found to be less than the occupational threshold limit value (TLV) adjusted to account for continuous exposure.

Based on the findings in the Base Line Risk Assessment, EPA has concluded that the risks posed by the ingestion of groundwater exceed the acceptable risk range 10^{-4} to 10^{-6}. The principle contribution to the carcinogenic groundwater risk was posed by arsenic. In addition, maximum concentrations of the following compounds exceed their respective MCLs, state drinking water standards or health advisories: arsenic, benzene, chlorobenzene, chromium, 1,2-dichloroethylene, nickel, 2-butanone, and tetrachloroethylene. Consequently, the cleanup at the Coakley Landfill Site will be based on protection of the groundwater beyond the compliance boundary as a future drinking water supply. Actual or threatened releases of hazardous substances in groundwater from this Site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health or welfare or the environment.

VII. DOCUMENTATION OF NO SIGNIFICANT CHANGES

EPA presented a Proposed Plan (preferred alternative) for remediation of the Site on March 2, 1990. The source control preferred alternative included:

1. Consolidation of sediments in the wetlands;
2. Consolidation of solid waste;
3. Capping of the landfill;
4. Collection and treatment of landfill gases;

5. Groundwater extraction and treatment;
6. Long-term environmental monitoring; and
7. Institutional controls where possible.

No significant changes from the Proposed Plan briefly described above have been made to the selected remedy as detailed in the Record of Decision. However, at the time of the issuance of the Proposed Plan, EPA had not specifically identified the construction of a fence around the Site. The chain link fence was identified as part of the remedy in the FS and the costs associated were included in the cost estimate in the FS and Proposed Plan.

The cleanup level for arsenic has been revised to 50 ug/L from 30 ug/L to reflect consistency with MCLs set forth in the Safe Drinking Water Act. This revision remains protective of human health and the environment and does not impact the selection of the remedy. The groundwater extraction and treatment component of the remedy remains necessary since levels of arsenic detected at the compliance boundary exceed 50 ug/L.

As stated in the Proposed Plan, the preferred alternative does not include any action involving remediation of the oily debris area identified at the Site (Appendix A, Figure 2). However, costs for remediating this debris were included in the total cost for each alternative in both the Feasibility Study and the Proposed Plan. These amounts have been deducted in this ROD. For alternatives SC-3 and SC-4, the total cost remains the same after rounding the figures. For SC-5 the cost is reduced by $800,000; for SC-6 the cost is reduced by $500,000. Given the overall cost of each alternative, these amounts were insignificant to the remedy selection process.

The following is presented as a point of clarification. In the Proposed Plan EPA identified approximately 2000 cubic yards of "contaminated" sediments located in the wetlands adjacent to the northwest side of the landfill. The RI identified an area of wetlands adjacent to the northwest corner of the Site as needing remediation due to landfill operations and landfill temporary cap erosion, which caused subsequent filling and sedimentation in the wetlands. Sediments in the wetland, estimated to be approximately 2,000 cubic yards, would need to be excavated and redeposited in the existing landfill area to restore the wetlands to its beneficial use.

Although results from a sediment sample taken during the RI did not exceed the cleanup level discussed above, this action is justified on the basis of restoring the wetlands which were filled as a result of the landfill operation and temporary cap erosion. During excavation and restoration, appropriate steps will be taken such as using clean and appropriate fill and installing silt barriers to prevent damage to the wetlands downstream of the work area. Sediment samples will be taken in and around the perimeter of the

excavated area to confirm that the remaining sediments in the wetland are below cleanup levels. To promote wetland revegetation, soils similar to those of the natural wetlands will be used, and sedges and other species will be planted.

VIII. DEVELOPMENT AND SCREENING OF ALTERNATIVES

A. Statutory Requirements/Response Objectives

Under its legal authorities, EPA's primary responsibility at Superfund sites is to undertake remedial actions that are protective of human health and the environment. In addition, Section 121 of Comprehensive Environmental Response, Compensation, and Liability Act of 1980, (as amended by Superfund and Reauthorization Act of 1986) (CERCLA) establishes several other statutory requirements and preferences, including: a requirement that EPA's remedial action, when complete, must comply with all federal and more stringent state environmental standards, requirements, criteria or limitations, unless a waiver is invoked; a requirement that EPA select a remedial action that is cost-effective and that utilizes permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and a preference for remedies in which treatment which permanently and significantly reduces the volume, toxicity or mobility of the hazardous substances is a principal element over remedies not involving such treatment. Response alternatives were developed to be consistent with these Congressional mandates.

Based on preliminary information relating to types of contaminants, environmental media of concern, prior and potential use as a drinking water source and potential exposure pathways, remedial action objectives were developed to aid in the development and screening of alternatives. These remedial action objectives were developed to mitigate existing and future potential threats to public health and the environment. These response objectives were:

1. Prevent ingestion of groundwater containing contamination in excess of Federal and State drinking water standards or criteria, or that poses a threat to public health and the environment.

2. Prevent the public from direct contact with contaminated soils, sediments, solid waste and surface water which may present a health risk.

3. Eliminate or minimize the migration of contaminants from the soil into groundwater.

4. Prevent the offsite migration of contaminants above levels protective of public health and the environment.

5. Restore groundwater, surface water, soils and sediments to the levels which are protective of the public health and the environment.

B. Technology and Alternative Development and Screening

CERCLA and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) set forth the process by which remedial actions are evaluated and selected. In accordance with these requirements, a range of alternatives was developed for the Site.

With respect to source control, which includes the groundwater under the landfill, the RI/FS developed a range of alternatives in which treatment that reduces the toxicity, mobility, or volume of the hazardous substances is a principal element. This range included an alternative that removes or destroys hazardous substances to the maximum extent feasible, eliminating or minimizing to the degree possible the need for long term management. This range also included alternatives that treat the principal threats posed by the Site but vary in the degree of treatment employed and the quantities and characteristics of the treatment residuals and untreated waste that must be managed; alternative(s) that involve little or no treatment but provide protection through engineering or institutional controls; and a no action alternative.

Section 2 of the Feasibility Study (FS) identified, assessed and screened technologies based on implementability, effectiveness, and cost. These technologies were combined into source control (SC) and management of migration (MM) alternatives. Section 3 of the FS presented the remedial alternatives developed by combining the technologies identified in the previous screening process in the categories identified in Section 300.430(e) (3) of the NCP. The purpose of the initial screening was to narrow the number of potential remedial actions for further detailed analysis while preserving a range of options. Each alternative was then evaluated and screened in Section 4 of the FS.

In summary, of the approximately 17 source control remedial alternatives screened in Section 2, five were retained for detailed analysis. Figure 3-1 in Section 3 of the Feasibility Study identifies the five alternatives that were retained through the screening process, as well as those that were eliminated from further consideration. Management of migration alternatives, although evaluated in the FS, will be reevaluated pending further studies of offsite groundwater migration.

IX. DESCRIPTION OF ALTERNATIVES

This section presents a narrative summary of each alternative evaluated. A detailed tabular assessment of each alternative can be found in Table 3-1 in Section 3 of the Feasibility Study.

A. Source Control (SC) Alternatives Analyzed

The source control alternatives analyzed for the Site include the following alternatives:

- SC-1: No-action Alternative;
- SC-3: Capping Including Consolidation (No Groundwater Treatment);
- SC-4: Capping/Onsite Groundwater Treatment;
- SC-5: Capping/Onsite Groundwater Pretreatment and Offsite Treatment and Disposal; and
- SC-6: Onsite Solid Waste/Groundwater Treatment and Disposal/Capping.

SC-1
No-Action

This alternative is included in the Feasibility Study (FS), as required by CERCLA, to serve as a basis for comparison with the other source control alternatives being considered.

This source control alternative would involve no remedial action on the contaminated soil, solid waste or groundwater. However, the no-action alternative would entail some activity in order to provide minimal protection of human health and the environment. A chain-link fence would be installed around the landfill area to prevent all non-authorized personnel from entering the Site. Institutional controls would be established in order to restrict future land use. The landfill would be loamed and seeded to control dust and erosion from wind and rain. A long term monitoring program would be instituted that would involve periodic collection of air, surface water and groundwater samples to evaluate potential exposure routes.

This alternative does not meet any identified ARARs, particularly since MCLs are already exceeded at the Site.

ESTIMATED TIME FOR DESIGN AND CONSTRUCTION:	2 months
ESTIMATED TIME FOR OPERATION:	30 years
ESTIMATED CAPITAL COST:	$ 820,000
ESTIMATED OPERATION AND MAINTENANCE (PRESENT WORTH):	$ 1,300,000
ESTIMATED TOTAL COST (PRESENT WORTH):	$ 2,120,000

SC-3
Capping Including Consolidation

This alternative involves consolidating approximately 2000 cubic yards of eroded sediment in the wetland under a new multi-layer cap to be installed on the landfill. Additionally, approximately 30,000 cubic yards of material from the east, west and south sides of the landfill would be excavated to reduce the area needing to be covered by the cap (Appendix A, Figures 7 and 8). The excavated material would then be mixed with sand as needed and used in the cap construction. Emissions created by excavation will be minimized by wetting down the soil with water or foam. Air monitoring will ensure compliance with emission standards.

The multi-layer cap system will be constructed over the landfill and will include a vegetative layer, a drainage layer and impermeable barrier (low permeability barrier of clay or synthetic liner material). The cap will reduce the potential for direct contact with the contaminated materials onsite and will control further migration of contaminants by reducing precipitation could filtering through and away from the Site. This cap will conform with state and RCRA solid waste requirements. A typical cap construction diagram can be found as Appendix A, Figure 9. A chain-link fence would be installed around the landfill area to prevent access to all non-authorized personnel. A gas collection and treatment system would also be installed to collect the gases coming off the landfill. These gases would be treated onsite by a thermal destruction process such as incineration. A long term monitoring program would be instituted involving periodic collection of air, surface water and groundwater samples to evaluate potential exposure routes.

Because this alternative does not include a groundwater treatment system, it will not meet MCLs and other groundwater standards.

ESTIMATED TIME FOR DESIGN AND CONSTRUCTION:	9 Months
ESTIMATED TIME FOR OPERATION:	30 Years
ESTIMATED CAPITAL COSTS:	$ 8,800,000
ESTIMATED OPERATION AND MAINTENANCE (PRESENT WORTH):	$ 2,400,000
ESTIMATED TOTAL COST (NET PRESENT WORTH):	$ 11,200,000

SC-4
Capping/Onsite Groundwater Treatment

This alternative involves consolidation of the solid waste followed by capping the landfill and extracting and treating onsite groundwater. The treated groundwater would either be recharged into the aquifer and/or discharged to onsite surface water. Recharge trenches will be installed to alleviate draining the wetlands. The cap would be similar to the one described in alternative SC-3. This alternative would also be similar to SC-3 in that it includes fencing, excavating 30,000 cubic yards of material from the landfill, 2,000 cubic yards from the wetlands and installing a gas collection and treatment system.

The groundwater extraction system would consist of several overburden and bedrock wells located along the southern and eastern perimeters of the landfill and a drainage system around the perimeter of the landfill. Recharge trenches will be located on the toe of the slope on the northwest and westerly edges of the landfill adjacent to the wetlands. Groundwater would be treated onsite to remove metals, VOCs and biological oxygen demand (BOD) and ammonia through a series of technologies involving chemical, physical and biological processes to comply with federal and state drinking water and discharge standards. The exact treatment will be determined during the design phase after additional studies. A conceptual treatment process diagram is shown in Appendix A, Figure 10. The processes are summarized below.

-Chemical process:	Metals removed by adding lime or caustic to form a sludge for offsite disposal
-Physical process:	VOCs removed by air stripping. Off-gases removed by incineration or activated carbon filtration.
-Biological process:	BOD, ammonia and remaining VOCs removed by rotating biological contactors (RBC) or activated carbon filtration to meet discharge requirements.

A long term monitoring program would be instituted involving periodic collection of air, surface water and groundwater samples to evaluate potential exposure routes.

ESTIMATED TIME FOR DESIGN AND CONSTRUCTION: 2 years
ESTIMATED TIME FOR OPERATIONS: 10 years groundwater extraction and treatment; 30 years for cap maintenance and monitoring.

ESTIMATED CAPITAL COST:	$ 12,800,000
ESTIMATED OPERATION AND MAINTENANCE (PRESENT WORTH):	$ 7,400,000
ESTIMATED TOTAL COST (NET PRESENT WORTH):	$ 20,200,000

SC-5
Capping/Onsite Groundwater Pretreatment and Offsite Treatment and Disposal

This alternative involves capping of the landfill and groundwater collection followed by onsite pretreatment and offsite disposal. Fencing, capping and groundwater collection would be accomplished as described in alternatives SC-3 and SC-4.

Groundwater would be pumped to publicly owned treatment works (POTW). Onsite pretreatment would occur to meet municipal requirements. Subsequent treatment would occur at the municipal plant in the Town of Hampton. The extent of pretreatment could include metals removal by precipitation and/or VOC removal by air stripping as discussed for the previous alternative (SC-4). To implement offsite treatment and disposal of groundwater, a pumping station and a new sewer main extending along U.S. Route 1 to just south of the Hampton-North Hampton town line would be constructed.

A long term monitoring program would be instituted involving periodic collection of air, surface water and groundwater samples to evaluate potential exposure routes.

ESTIMATED TIME FOR DESIGN AND CONSTRUCTION:	2 Years
ESTIMATED TIME FOR OPERATION:	10 Years for groundwater extraction; 30 years for cap maintenance and monitoring.
ESTIMATED CAPITAL COST:	$ 13,200,000
ESTIMATED OPERATION AND MAINTENANCE (PRESENT WORTH)	$ 5,700,000
ESTIMATED TOTAL COST	$ 18,900,000

SC-6
Onsite Solid Waste/Groundwater Treatment and Disposal/Capping

This alternative involves excavation of the entire landfill and treatment of contaminated wastes and solids by incineration and/or solidification. Emissions created by the extensive excavation will be minimized by wetting down the soil with water or foam. Fencing, regrading and capping of the landfill area as in alternative SC-3, as well as collection and treatment of the groundwater underlying the Site as in alternative SC-4 would also be required. Samples of soils and solid waste in the landfill would be collected and analyzed to determine which areas should be removed for

solidification and/or incineration to achieve the desired cleanup goals. Material containing high levels of organic compounds would be incinerated onsite through the use of a mobile incinerator. Emissions would be directly monitored to evaluate incinerator performance.

Material containing high levels of metals, which could include the incinerator ash, would be solidified and placed back into the landfill along with the materials that meet cleanup goals. Solidification of metals would be achieved by mixing the waste with a lime or concrete based material that sets into an easily handled solid product with reduced permeability. Incinerator ash containing metals at levels that could leach into the groundwater would also be solidified and placed in the landfill.

A long term monitoring program would be instituted involving periodic collection of air, surface water and groundwater samples to evaluate potential exposure routes.

ESTIMATED TIME FOR DESIGN AND CONSTRUCTION:	2 Years
ESTIMATED TIME FOR OPERATION:	Solid waste excavation and treatment, 20 months; groundwater, 10 years; cap maintenance and monitoring, 30 years.
ESTIMATED CAPITAL COST:	$ 45,300,000
ESTIMATED OPERATION AND MAINTENANCE (PRESENT WORTH)	$ 8,600,000
ESTIMATED TOTAL COST (NET PRESENT WORTH)	$ 53,900,000

B. Management of Migration (MM) Alternatives

The Feasibility Study (FS) analyzed management of migration alternatives to cleanup the contaminants that migrated offsite. However, EPA believes that insufficient data exist to properly characterize the extent and chemical makeup of the offsite groundwater. Additionally, since the plume is primarily in or under a major wetland, the implementation of a conventional groundwater extraction system would be extremely difficult, very costly and could result in extensive and irreversible damage to the wetland. The existence of a contaminant plume in the bedrock aquifer will further complicate any cleanup effort for the offsite ground.

As part of the implementation of the source control remedy, EPA proposes to expand the offsite groundwater monitoring system and undertake an investigation to better characterize the nature and extent of contamination in the offsite groundwater. The investigation will also include an evaluation of possible remediation technologies and their impact on the wetlands. An environmental assessment will also be performed. EPA will design the onsite remedy to capture as much as practicable of the contamination that has already migrated from the landfill.

The expanded monitoring program, which includes monitoring residential wells in the Coakley Landfill area, and the groundwater investigation of the offsite contamination will be one of the first actions taken as part of the Coakley Landfill remediation. The investigation will continue until sufficient data is obtained for EPA to make a decision regarding the remediation of offsite groundwater. That decision will be incorporated in a second Record of Decision (ROD).

Installing a well-designed source control remedy at the present time will minimize offsite migration of contaminants. Accordingly, a less extensive management of migration remedy will be necessary in the future. An effective source control remedy will result in lower costs and less time to achieve offsite groundwater cleanup goals.

X. SUMMARY OF THE COMPARATIVE ANALYSIS OF ALTERNATIVES

Section 121(b)(1) of CERCLA presents several factors that at a minimum EPA is required to consider in its assessment of alternatives. Building upon these specific statutory mandates, the NCP articulates nine evaluation criteria to be used in assessing the individual remedial alternatives.

A detailed analysis was performed on the five alternatives using the nine evaluation criteria in order to select a site remedy. The following is a summary of the comparison of each alternative's strength and weakness with respect to the nine evaluation criteria. These criteria and their definitions are as follows:

Threshold Criteria
An alternative must meet the two threshold criteria described below in order to be eligible for selection in accordance with the NCP.

1. **Overall protection of human health and the environment** addresses whether or not a remedy provides adequate protection and describes how risks posed through each pathway are eliminated, reduced or controlled through treatment, engineering controls, or institutional controls.

2. **Compliance with Applicable or relevant and appropriate requirements (ARARS)** addresses whether or not a remedy meets all ARARs or other Federal and State environmental laws and/or provides grounds for invoking a waiver.

Primary Balancing Criteria
The following five criteria are used to compare and evaluate elements of alternatives which have met the threshold criteria to each other.

3. **Long-term effectiveness and permanence** refers to the ability of a remedy to maintain reliable protection of human health and the environment over time, once clean-up goals have been met.

4. **Reduction of toxicity, mobility, or volume through treatment** addresses the degree to which alternatives employ recycling or treatment that reduces toxicity, mobility, or volume including how treatment is used to address the principal threats posed by the site.

5. **Short term effectiveness** addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period, until clean-up goals are achieved.

6. **Implementability** addresses the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular option.

7. **Cost** includes estimated capital and operation & maintenance (O&M) costs, as well as present-worth costs.

Modifying Criteria

The modifying criteria are factored into the final balancing of remedial alternatives. This generally occurs after EPA has received public comment on the RI/FS and Proposed Plan.

8. **State acceptance** addresses the state's position and key concerns related to the preferred alternative and other alternatives; and the state's comments on ARARs or the proposed use of waivers.

9. **Community acceptance** addresses public general response to the alternatives described in the Proposed Plan and RIFS report.

A detailed tabular assessment of the nine criteria applied to each alternative can be found in Section 4 in Tables 4-2 to 4-6 of the Feasibility Study.

Following the detailed analysis of each individual alternative, a comparative analysis, focusing on the relative performance of each alternative against the nine criteria, was conducted. This comparative analysis can be found in Table 4-12 of the Feasibility Study.

The following section balances the strengths and weaknesses of the five alternatives under each of the nine criteria set out above.-

1. Overall protection of human health and the environment

Alternatives SC-4, SC-5 and SC-6 use technologies that will be protective of human health and the environment by reducing contamination. These technologies include capping, gas collection and groundwater treatment. Alternative SC-1 is not protective since it anticipates no action onsite. Alternative SC-3 is not protective because it does not incorporate groundwater treatment, only gas collection and treatment and capping.

The combined capping and gas and groundwater treatment components of SC-4, SC-5 and SC-6 would treat already contaminated groundwater to federal and state drinking water standards at the Site compliance boundary. Further, downward and offsite migration of contaminants in the groundwater caused by precipitation and soil leachate would be controlled. Dust erosion, surface runoff and direct contact with contaminated soils, wastes and sediments would also be minimized by capping, removing and consolidating the sediments in the wetland into the landfill and fencing the landfill area.

Capping and gas treatment alone, without a groundwater treatment system as in SC-3, would allow contaminants to continue to migrate downward into the groundwater and offsite. Containment alone is normally used as a remedy at sites which have naturally occurring clay or till layers under the groundwater flow zone which act as a cap under the Site to contain this downward migration. The Coakley Landfill Site has no clay or till under the groundwater flow zone; rather the Landfill is situated on bedrock. Without groundwater treatment, SC-3 will not meet MCLs at the Site compliance boundary.[1] Similarly, alternative SC-1 will not meet MCLs at the Site boundary.

2. Compliance with ARARS

Each alternative was evaluated for compliance with ARARs, including chemical-specific, action-specific and location specific ARARs. These alternative specific ARARs are presented in Appendix B, Tables 7 through 16. Alternatives SC-4 and SC-6 meet their respective ARARs. SC-5 may not meet Executive Order 11990 (Protection of Wetlands) because of the negative impact groundwater pumping and offsite treatment may have on the wetlands. SC-4 has less impact on the wetlands in that treated groundwater is recharged to the aquifers or discharged directly to surface water. SC-1 and SC-3 do not attain the following applicable federal and

[1]The Site compliance boundary is described in Section XI. A. 1 at page 33.

state ARARs for groundwater: Safe Drinking Water Act (SDWA), WS 410 NH Groundwater Quality Criteria, WS 300 NH Drinking Water Standards, and Federal Ambient Water Quality Criteria.

3. Long term effectiveness and permanence

Alternative SC-6 offers the greatest degree of long-term effectiveness and permanence. This alternative provides for onsite incineration and/or solidification of contaminated soil and wastes, onsite extraction and treatment of contaminated groundwater and capping of the landfill. Incineration and/or solidification destroys and/or immobilizes the source of contamination and meets cleanup goals for VOCs and metals. However, should subsurface conditions change significantly, metals bound into the solidification matrix may again become mobile and be released to the groundwater.

Alternative SC-4 and SC-5 also provide for long-term effectiveness and permanence in that they include capping and groundwater treatment. Capping will meet RCRA closure requirements; however, the design life of a cap is subject to some uncertainty. While cap replacement in the future is possible, proper installation and maintenance will extend the cap's life significantly. A long-term monitoring program, such as the programs included in SC-4, SC-5 and SC-6, would provide sufficient warning of a potential cap failure. Although SC-4 and SC-5 do not provide for direct treatment of the soils and wastes, the waste material under the cap should degrade naturally, over time, to levels which no longer pose a threat to public health and the environment.

Groundwater treatment will meet cleanup goals at the Site compliance boundary as long as the cap integrity is maintained. Capping and removing the groundwater from the Site as required by SC-4, SC-5 and SC-6 are most effective in minimizing the potential for further migration of contaminated groundwater. Since SC-3 does not include groundwater extraction and treatment, only the long-term effectiveness and permanence associated with capping would apply to this alternative. Contaminated groundwater would continue to migrate offsite for a significant period of time. Alternatives SC-1, is the No-Action Alternative, and as such provides very little, if any, long-term effectiveness and permanence.

4. Reduction of toxicity, mobility, or volume through treatment

Alternatives SC-4, SC-5, and SC-6 provide for some reduction of toxicity, mobility or volume through treatment. SC-6 provides for the most reduction of toxicity, mobility and volume in soil and in groundwater through incineration and/or solidification of contaminated soil and waste, extraction and treatment of contaminated groundwater under the Site, and collection and treatment of gases generated in the landfill.

Alternatives SC-4 and SC-5, although they do not include incineration/solidification, will also reduce toxicity, mobility, and volume of contaminants through groundwater extraction and treatment. Capping, which alternatives SC-3, SC-4, SC-5 and SC-6 incorporate to varying extents, reduces only mobility of the soil contaminants and does not involve treatment. The cap will limit infiltration of precipitation and control leaching of soil contamination into the groundwater. However, capping without groundwater treatment as in SC-3, does not reduce toxicity and volume of contaminants.

Alternative SC-3 will only reduce contamination associated with the treatment of the landfill gases. Alternative SC-1 provides no reduction in toxicity, mobility or volume through treatment since no treatment is included.

5. Short-term effectiveness

With respect to protection of the community, alternatives SC-4 and SC-5 pose a slight potential for adverse impact to community health from emissions during excavation and consolidation of waste material and sediments in the landfill prior to capping. However, strict engineering controls, wetting the soil and monitoring the air will be in effect to insure that negative impacts do not occur. Alternative SC-6 could prolong community exposure to air emissions because, unlike SC-4 and SC-5, most of the landfill will be excavated and treated through solidification and/or incineration. Excavation and treatment of waste and soils for SC-6 will last approximately 20 months. Excavation and consolidation for SC-4 and SC-5 will last only three months. Therefore, in addition to emissions from the extensive excavation, SC-6 may potentially expose the community to incineration emissions from the wastes as well as the captured gas emissions. The emissions from the gas treatment systems of SC-4 and SC-5 are minimal.

Risk to workers during remedial actions in alternatives SC-4 to SC-6 will be controlled with safe working practices. SC-6 may expose workers to potential emissions as described above.

With respect to long-term environmental impacts, SC-4 through SC-6 could potentially release contaminants to the wetlands during excavation. Removing groundwater from the Site, as required in SC-5, could temporarily dry up major portions of the wetlands. While groundwater will also be removed for onsite treatment in SC-4 and SC-6, impacts to the wetlands will be minimized by recharge to the aquifer or by discharge to onsite surface water.

For alternatives SC-4, SC-5, and SC-6 construction will be completed in two years; groundwater will meet cleanup levels in 10 year. Alternatives SC-1 and SC-3 will not be protective since migration of contamination is not addressed.

6. Implementability

While all of the alternatives can be implemented, some alternatives are technically easier to implement than others, based on their design and complexity.

SC-3, capping, would be implementable since the remedy is technically easy to design and construct. SC-4 capping and onsite groundwater treatment, is the simplest treatment alternative to implement. This technology, used on other Superfund sites, is not difficult to design and construct.

SC-5, capping with offsite groundwater treatment, may be very difficult to implement since acceptance by a municipal wastewater treatment facility of partially treated groundwater is required. Whether a municipality would be willing to accept treated groundwater is uncertain.

SC-6 would be the most difficult to implement since it involves extensive excavation of the solid waste and treatment, incineration and/or solidification, of the solid waste.

The no-action alternative would be difficult to implement effectively since there is no guarantee that the institutional controls will be complied with in the future.

Cost

The estimated present worth value of each alternative and the options are as follows:

COST COMPARISON OF SOURCE CONTROL ALTERNATIVES

		Capital Costs	O&M Costs ($/yr)	*Present Worth
SC-1	No Action	$ 820,000	43,000	2,120,000
SC-3	Capping Including Consolidation	8,800,000	80,000	11,200,000
SC-4	Capping/Onsite Groundwater Treatment	12,800,000	245,000	20,200,000
SC-5	Capping/Offsite Treatment and Disposal	13,200,000	190,000	18,900,000
SC-6	Onsite Solid Waste/ Treatment and Disposal/ Capping	45,300,000	285,000	53,900,000

State acceptance

The New Hampshire Department of Environmental Services (DES) has been involved with the Site from the beginning as summarized in Section II of this document "SITE HISTORY AND ENFORCEMENT ACTIVITIES". The Remedial Investigation and Feasibility Study was performed as a state lead through a cooperative agreement between the State and the EPA. The New Hampshire DES and the Attorney Generals Office have reviewed this document and concur with the alternative selected for a source control remedy as documented in the attached Declaration of Concurrence.

Community acceptance

The comments received during the public comment period and the discussions during the Proposed Plan and FS public meeting are summarized in the attached document entitled "The Responsiveness Summary" (Appendix C). Varied comments were received from residents living near the Site, environmental citizen groups, and from the Coakley Landfill Steering Committee. The citizens generally desire the EPA to choose the most stringent remedy, SC-6, or else excavate and remove onsite waste. The Steering Committee generally wants the EPA to choose the minimal remedy which is similar to SC-3.

XI. THE SELECTED REMEDY

EPA has selected alternative SC-4, Capping/Onsite Groundwater Treatment, for the first operable unit at the Coakley Landfill Site. Managing offsite migration of contaminated groundwater, the second operable unit, will be addressed in a later Record of Decision. A detailed description of the selected remedy along with cleanup levels is presented below.

A. Cleanup Levels

Cleanup levels have been established for contaminants of concern identified in the baseline risk assessment which have been found to pose an unacceptable risk to public health. Cleanup levels have been set based on the appropriate ARARs (e.g. Drinking Water MCLGs and MCLs) if available. In the absence of a chemical specific ARAR or other suitable criteria to be considered, a 10^{-6} excess cancer risk level for carcinogenic effects or a concentration corresponding to a hazard index of one for compounds with noncarcinogenic effects was used to set cleanup levels. Periodic assessments of the protection afforded by remedial actions will be made as the remedy is being implemented and at the completion of the remedial action. If the remedial action is not found to be protective or fails to meet the cleanup levels established in this Record of Decision, further action shall be required.

1. Groundwater

Because the aquifer at and beyond the compliance boundary of the Site is a potential source of drinking water, it is a Class IIA aquifer and the MCLs and non-zero MCLGs established under the Safe Drinking Water Act are ARARs. The compliance boundary established for groundwater cleanup levels is the perimeter of the Site which runs close to the current property boundary of the Coakley Landfill on the south, west and east sides and approximately 200 feet from the current toe of the slope of the landfill to the north and northeast within the Site boundary. EPA has no reason to believe that waste was disposed of beyond the property boundaries of the Coakley Landfill Site. However, the compliance boundary extends 200 feet beyond the edge of the apparent landfill to ensure that all wastes are incorporated in the remedy since the exact location of waste disposed of in this north and northeast area has not been fully documented. This point of compliance is protective of the public health and the environment in that it minimizes the possibility of offsite migration of contamination from waste which may extend beyond the apparent edge of the landfill.

Cleanup levels for known and probable carcinogenic compounds (Class A & B) have been set at the appropriate MCL or non-zero MCLG. Cleanup levels for the Class C, D and E compounds (possible carcinogens not classified and no evidence of carcinogenicity) have been set at the MCLG. In the absence of a MCLG, a MCL, or a proposed drinking water standard or other suitable criteria to be considered (i.e. health advisory, state standard), a cleanup level was derived for carcinogenic effects based on a 10^{-6} excess cancer risk level considering the ingestion of groundwater.

Cleanup levels for compounds in groundwater exhibiting noncarcinogenic effects have been set at the MCLG. In the absence of a MCLG or a proposed drinking water standard or other suitable criteria to be considered (i.e. health advisory, state standard), cleanup levels for noncarcinogenic effects have been set at a level thought to be without appreciable risk of an adverse effect when exposure occurs over lifetime (hazard index = 1).

Table 12 below summarizes the cleanup levels for carcinogenic and noncarcinogenic contaminants of concern identified in groundwater.

TABLE 12: GROUNDWATER CLEANUP LEVELS

Carcinogenic Contaminants of Concern	Cleanup Level (ug/L)	Basis*	Risk Level
Benzene	5	MCL	$7x10^{-5}$
Tetrachloroethene	3.5	NH	$5x10^{-6}$
Arsenic	50	MCL	$2x10^{-4}$*

Noncarcinogenic Contaminants of Concern	Cleanup Level (ug/L)	Basis*	HI Index
2-Butanone (MEK)	200	HA	0.1
Phenol	280	HA	0.01
Diethyl phthalate	2,800	HA	0.1
Chlorobenzene	100	pMCLG	0.1
Trans-1,2-dichloroethene	100	pMCLG	0.1
Chromium	50	MCL	0.3
Nickel	100	HA	0.1

KEY

* -

HA = Health Advisory
NH = NH Drinking Water Standard
MCL = Maximum Contaminant Level, Safe Drinking Water Act
pMCLG = Proposed Maximum Contaminant Level Goal, Safe Drinking Water Act

* The cleanup level for arsenic has been set at the MCL of 50 ug/L. The carcinogenic risk posed by arsenic at 50 ug/L in groundwater will approximate 2 in 1,000. However, in light of recent studies indicating that many skin tumors arising from oral exposure to arsenic are non-lethal in nature and in light of the possibility that the dose-response curve for the skin cancers may be sublinear (in which case the cancer potency factor used to generate risk estimates will be overstated), it is Agency policy to manage these risks downward by as much as an order of magnitude (x 10).[2] As a result, the carcinogenic risks for arsenic at this Site have been managed as if they were 2 in 10,000.

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[2]See EPA memorandum, "Recommended Agency Policy on the Carcinogenicity Risk Associated with the Ingestion of Inorganic Arsenic" dated June 21, 1988.

These cleanup levels must be met at the completion of the remedial action at the compliance boundary. EPA has estimated that these levels will be attained within approximately ten years.

The hazard index for the remaining compounds were each significantly less than 1. Consequently, the stated levels should be without appreciable risk of non-carcinogenic health effects.

When achieved, the stated cleanup levels for these 10 contaminants shall be protective of public health considering a lifetime of consumption of 2 liters per day of groundwater. EPA will review performance data periodically after the remedy is implemented to insure that the remedy remains protective.

2. Soil

Cleanup levels for the organic compounds in soils were established to measure contaminant levels in the remaining sediments in the wetlands after excavation. These cleanup levels are necessary to protect human health and the aquifer from potential soil leachate at the compliance boundary at the Coakley Landfill Site. The remaining sediments in the wetlands will meet these cleanup levels after excavation. Direct physical contact or the accidental ingestion of soils was not found to pose a significant health risk.

The Organic Leaching Model (OLM), 51 Fed. Reg. 41082, (1986), was used to estimate residual soil levels that are not expected to impair future groundwater quality. ARARs in groundwater (MCLGs and MCLs) were used as input into the leaching model. In the absence of an ARAR, the level corresponding to a 10^{-6} risk level (for carcinogens) or a hazard index of one (noncarcinogenic effects) was utilized. If the values described above were incapable of being detected or were below regional background values, then either the detection limit or background values was substituted. Table 13 below summarizes the soil cleanup values for the contaminants of concern developed to protect public health and the aquifer.

TABLE 13: SOIL CLEANUP LEVELS FOR THE PROTECTION OF HUMAN HEALTH AND THE AQUIFER BASED ON THE ORGANIC LEACHING MODEL

Carcinogenic Contaminants of Concern	Soil Cleanup Level (mg/kg)	Basis for Model Input[a]	Residual Groundwater Risk
Benzene	0.055	MCL	7×10^{-6}
Tetrachloroethene	0.13	NH	5×10^{-6}

Noncarcinogenic Contaminants of Concern	Soil Cleanup Level (mg/kg)	Basis for Model Input[a]	Residual Groundwater Hazard Index
2-Butanone (MEK)	0.8	HA	0.1
Phenol	2.3	NH	0.01
Diethyl phthalate	900	HA	0.1
Chlorobenzene	9.4	pMCLG	0.1
Trans-1,2-dichloroethene	2.2	pMCLG	0.1

KEY

[a] -

HA = Health Advisory
NH = NH Drinking Water Standard
MCL = Maximum Contaminant Level, Safe Drinking Water Act
pMCLG = Proposed Maximum Contaminant Level Goal, Safe Drinking Water Act

These cleanup levels for organic constituents in soils are consistent with ARARs for groundwater and attain EPA's goal for remedial actions. Soils exceeding these levels after testing will be excavated.

B. Description of Remedial Components

Capping/Onsite Groundwater Treatment

Alternative SC-4, Capping/Onsite Groundwater Treatment, involves consolidating sediments and solid waste followed by capping the landfill and extracting and treating of onsite groundwater and landfill gases. Below is a list of the major components of the remedy:

1. Consolidation of sediment in the wetlands
2. Consolidation of solid waste;
3. Capping of the landfill;

4. Fencing of the landfill;
5. Collection and treatment of landfill gases;
6. Groundwater extraction and treatment;
7. Long-term environmental monitoring; and
8. Institutional controls where possible.

Approximately 2,000 cubic yards of sediment in the wetlands adjacent to the northwest corner of the Site will be excavated and redeposited into the existing landfill area before the new cap is installed. During excavation and restoration of the wetlands, appropriate steps such as using clean and appropriate fill and installing silt barriers to prevent damage to the wetlands downstream of the work area will be taken. Sediment samples in and around the perimeter of the excavated area will also be taken to confirm that the remaining sediments are below cleanup levels. To promote wetland revegetation, soils similar to those of the natural wetlands will be used, and sedges and other species will be planted.

In addition, approximately 30,000 cubic yards of material from the east, west and south sides of the landfill will be excavated to reduce the area to be capped. This material will be mixed with sand as needed and used to construct the sub-base layer which lies below the impermeable layer of the cap to ensure proper grading of the landfill.

The landfill cap design will be consistent with NH DES and RCRA closure requirements. At a minimum, the cap would consist of a multi-layer system composed of a vegetative topsoil layer and a subsurface drainage layer overlying a low-permeability barrier of clay or synthetic liner material. The details of the materials of construction and the thickness of the layers will be left to the remedial design phase. This will give the designers the ability to incorporate state of the art construction materials and technology for site specific conditions as required by the EPA. A typical diagram of cap construction can be found as Appendix A, Figure 9.

Capping also involves collecting and treating landfill gases, such as methane, generated below the cap. Methane and other decomposing gases will be vented by means of an active interior gas collection/recovery system. The gas collection system will consist of small-diameter PVC pipe placed in a network of shallow trenches backfilled with crushed stone. The trenches will be located within the intermediate cover layer below the final cover. The collected gases will be treated onsite by a thermal destruction process. Emissions generated by this process will be minimized by using best available demonstrated technology and by monitoring. The technology used for this process will be evaluated during the design phase, which may include treatability studies.

A 6 foot chain link fence topped with barbed wire will encompass the landfill area which will be accessible only to authorized personnel. Approximately 6,000 linear feet of fencing will be required. Keys to the gates will be available to operators of the treatment plant and to regulating authorities.

The groundwater extraction system will consist of overburden and bedrock wells located within and along the perimeter of the landfill. A drainage system will also be located around the perimeter (Appendix A, Figure 11). Groundwater will be treated onsite to remove metals and organics (both VOCs and semi-VOCs) through a series of technologies involving chemical, physical and biological processes. The exact treatment will be determined during the design phase after additional studies, which may include additional groundwater sampling and pilot and/or treatability work. The treated groundwater will be recharged into the aquifer or discharged to onsite surface water during periods of high groundwater. Any drying effect on the wetlands will be minimized by recharging the treated groundwater to the aquifer or discharging it to onsite surface water.

A conceptual treatment process diagram is shown as Appendix A, Figure 10 and described in more detail below.

Extracted groundwater will first undergo removal of metals. Adding lime or caustic causes iron, arsenic and other metals to coagulate and settle into a sludge at the bottom of the tank. The sludge will be tested and properly disposed of at an appropriate offsite treatment or disposal facility.

The groundwater is then passed through an air stripping chamber to remove VOCs by forcing air up through the water. This causes the organic contaminants to be carried from the water into the air stream. Since air leaving the stripper will contain small quantities of VOCs, it will then be treated through incineration or activated carbon filtration prior to release to the atmosphere. The combined processes will effectively remove approximately 99 percent of VOCs from the groundwater and air stream.

After treatment the water will be discharged to a series of ten recharge structures located along the service road west and north of the landfill whenever feasible. Alternatively, during periods of high groundwater, some or all of the treated water may need to be discharged to the surface water. Should this occur, the treated groundwater will not only meet federal and state drinking water and discharge standards but also ambient water quality criteria through additional treatment such as activated carbon filtration or biological treatment. Biological treatment will effectively remove BOD and ammonia. Activated carbon filtration may effectively remove BOD and ammonia.

Periodic review and modification of the design, construction, maintenance and operation of the groundwater extraction and treatment system will be necessary. Performance of the system will be evaluated annually, or more frequently, to determine if the goals and standards of the design criteria are being met. If not, adjustment or modification may be necessary. These adjustments or modifications may include relocating or adding extraction wells or altering pumping rates. Switching from continuous pumping to pulsed pumping may improve the efficiency of contaminant recovery and should be evaluated should modification be necessary. Should new information regarding the extraction and treatment technology exist, it will be evaluated and applied as appropriate.

After the cleanup levels have been met and the remedy is determined to be protective, the groundwater system will be shut down. A groundwater monitoring system will then be utilized to collect information quarterly for three years to ensure that the cleanup levels have been met and the remedy is protective. Once these levels are maintained and the remedy is protective for this period of time, an additional monitoring program for the Site in accordance with New Hampshire Hazardous and Solid Waste rules will be implemented.

To the extent required by law, EPA will review the Site at least once every five years after the initiation of remedial action at the Site if any hazardous substances, pollutants or contaminants remain at the Site to assure that the remedial action continues to protect human health and the environment. If after 5 years there is no progress or, if after 10 years cleanup levels are not attained, the groundwater remedy shall be reconsidered. EPA will also evaluate risk posed by the Site at the completion of the remedial action (i.e., before the Site is proposed for deletion from the NPL).

XII. STATUTORY DETERMINATIONS

The remedial action selected for the Coakley Landfill Site is consistent with CERCLA and, to the extant practicable, the NCP. The selected remedy is protective of human health and the environment, attains ARARs, and is cost-effective. The selected remedy also satisfies the statutory preference for treatment which permanently and significantly reduces the toxicity, mobility or volume of hazardous substances as a principal element. Additionally, the selected remedy utilizes alternative treatment technologies to the maximum extent practicable.

A. The Selected Remedy is Protective of Human Health and the Environment

The remedy at this Site permanently reduces the risks posed to human health and the environment by reducing and controlling exposure to human and environmental receptors through treatment, engineering controls, and institutional controls. More specifically, capping the landfill will eliminate exposure to contaminants by direct contact and will control exposure from dust erosion and surface runoff. Capping will also limit infiltration of precipitation and control leaching of soil contaminants into the groundwater. Collecting and treating gas and pumping and treating the groundwater will control potential exposure to VOCs and semi-VOCs from the landfill. The selected remedy will attain remediation levels set in accordance with health-based ARARs. Moreover, the selected remedy will result in human exposure levels that are below the hazard index of one for noncarcinogens. Capping the landfill will eliminate further groundwater contamination from soil leachate. Groundwater and gas treatment will reduce the toxicity and concentration of contaminants and will contain contaminants landfill to eliminate contamination of the aquifer. Extracting and treating groundwater reduces cancer and chemical hazard risks. A long-term monitoring program will insure the remedy remains protective of human health and the environment. Finally, implementation of the selected remedy will not pose unacceptable short-term risks or cross-media impacts since the landfill will only be minimally disturbed during cap construction and relocating of sediment in the wetland.

B. The Selected Remedy Attains ARARs

This remedy will meet or attain all applicable or relevant and appropriate federal and state requirements that apply to the Site. Substantive portions of environmental laws identified as ARARs for the selected remedial action include:

Chemical Specific

New Hampshire Surface Water Quality Standards (Ws 430)
New Hampshire Air Quality Rules (RSA Chapter 125-C)
Safe Drinking Water Act - Maximum Contaminant Levels (SDWA)
Federal Ambient Water Quality Criteria
National Ambient Air Quality Standards
New Hampshire Drinking Water Standards

Location Specific

Clean Water Act (CWA)
Fish and Wildlife Coordination Act
Executive Order 11990 (Protection of Wetlands)
New Hampshire Solid Waste Regulations (He-P 1901)

New Hampshire Wetlands Regulations (Ws 300 and 400)
New Hampshire Hazardous Waste Regulations (He-P 1905)
New Hampshire Hazardous Waste Regulations

Action Specific

Resource Conservation and Recovery Act (RCRA)[1]
OSHA General Industry Standards
OSHA Safety and Health Standards
OSHA Recordkeeping, Reporting and Related Regulations
DOT Rules for Transportation of Hazardous Materials

To Be Considered

New Hampshire Protection of Ground Water Regulations (Ws 410)
EPA Risk Reference Doses
EPA Carcinogen Assessment Group Potency Factors
Threshold Limit Values
US EPA Offsite Policy
OSWER Directive 9355.0-28

[1] New Hampshire is a RCRA authorized State Program.

Tables 2-1 through 2-3 in Section 2.0 of the FS, lists all ARARs identified for the Site and whether they are applicable, relevant and appropriate or to be considered (See Appendix B, Tables 9, and 14 through 18). Appendix F of the FS contains a list of identified ARARs for all the alternatives. Appendix F also presents a brief synopsis of the requirements and notes whether or not they will be attained and what action, if any, is necessary to meet the ARAR (See Appendix B, Table 9). Any changes to applicability or appropriateness or relevance are discussed below.

The remedial action involves installing groundwater collection wells and trenches, constructing a groundwater treatment facility and placing a multi-layer cap with a gas collection recovery system incorporated over the source. An onsite thermal destruction unit will be constructed to treat the gas. During all construction and operation activities, OSHA requirements are applicable .

1. Chemical Specific

a. Federal and State Drinking Water Standards

The groundwater in the aquifer at and beyond the compliance boundary of the landfill would be a possible drinking water source were it not contaminated by leachate from the landfill. Maximum Contaminant Levels (MCLs) promulgated under the Safe Drinking Water

Act which regulate public drinking water supplies, are applicable to drinking water at the tap and are not applicable to groundwater. However, because the groundwater may be used as a potential drinking water source, MCLs are relevant and appropriate.

New Hampshire's Protection of the Groundwater of the State regulations do not establish groundwater quality standards, but do establish groundwater criteria. Included in this criteria is the requirement that no person shall cause the groundwater to contain a substance at a level that the state determines may be potentially harmful to human health or to the environment. Because New Hampshire's regulations do not contain a standard or level of control as required by § 121(d)(2)(A)(ii) of CERCLA, they will not be an ARAR. They are, however, to be considered (TBCs) and will be met. In addition, the State of New Hampshire Department of Public Health Service consumption advisories for water supplies have been determined to be considered (TBCs) and were used in absence of an MCLs in setting Site cleanup levels for: Phenol, 280 ppb and Tetrachloroethene, 3.5 ppb.

This remedy will attain these ARARs by meeting the groundwater cleanup goals at the compliance boundary through the groundwater treatment system and by capping the source of contamination. Capping will control further leachate of contaminants into the groundwater from the landfill itself. Treating the groundwater will reduce levels of contamination at the compliance boundary to the cleanup goals. Any leachate migrating from the landfill will not contaminate the groundwater at levels exceeding the ARARs. Treated groundwater will also meet federal standards and state criteria for drinking water.

2. Location Specific

a. Federal and State Surface Water Standards

The effluent standards of Title III of the Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977 (CWA) and state surface water discharge standards are applicable to the action since the selected remedy may involve direct discharge to surface water rather than recharge into the aquifer. The state's Water Quality Standards establish standards for surface water quality based on three use classifications. These standards incorporate by reference the Federal Ambient Water Quality Criteria. The surface waters in an around the Site are classified as Class B waters which are acceptable for swimming and other recreation, fish habitat and, after adequate treatment, use as water supplies.

Title III, along with Executive Orders 11990 (Protection of Wetlands) and state wetland standards are applicable to that portion of the action involving consolidation of 2,000 cubic yards of sediment in the wetland under the cap. These rules prohibit

activity adversely affecting a wetland if a practicable alternative which has less affect is available. Consolidating sediment in the wetland is necessary because soils have eroded from the temporary cap on the landfill and from landfill operation activities, thereby damaging portions of the wetlands. Leaving the wetlands in their present condition fails to restore wetlands to their original beneficial use and fails to maintain the adjacent wetlands' water storage capabilities. Removing less than 2,000 cubic yards fails to capture all of the eroded sediment presently in the wetlands. Consolidation will be conducted to avoid or minimize the destruction, loss and degradation of Site wetlands.

After reviewing the Federal Emergency Management Agency, Floodplain Insurance Rate Maps for Towns of North Hampton, Greenland and Rye, EPA has determined that the Site is not located in a 100-year floodplain. Executive Order 11988 (Floodplain Management) is therefore not an ARAR for the Coakley Landfill Site.

b. Federal Clean Air Act and New Hampshire Air Pollution Regulations

The National Ambient Air Quality Standards promulgated under the Clean Air Act are relevant and appropriate to the control of particulate matter during excavation, groundwater treatment and active gas collection and treatment. The New Hampshire air quality standards are slightly more stringent than federal regulations and are therefore applicable to the remedy. Although initial air sampling offsite indicated airborne VOCs were below threshold limit values, controls may be necessary to prevent fugitive dust and chemical emissions during remedial action. The use of Best Available Control Technology will meet these ARARs.

In addition, EPA guidance on control of air emissions (OSWER Directive 9355.0-28, June 15, 1989) is to be considered for the Site, which is in an non-attainment area. For such an area, the directive indicates the need for control of VOC emissions from Superfund air strippers and soil vapor extraction systems based upon actual emission rates of VOCs. Gases generated by air stripping during the groundwater treatment phase and gases generated by the landfill will be treated by either a carbon adsorption unit or a thermal destruction unit.

3. Action specific

a. Federal Hazardous and Solid Waste Amendments to the Resource Conservation and Recovery Act and New Hampshire Hazardous and Solid Waste Regulations

The State of New Hampshire has been authorized by EPA to administer and enforce RCRA programs in lieu of the federal authority. The

authorized state hazardous waste regulations are equivalent to or more stringent than the federal RCRA regulations. Compliance with New Hampshire's RCRA regulations is discussed below.

Compliance with RCRA depends on whether the wastes are RCRA hazardous wastes as defined under New Hampshire's RCRA program. Wastes at the Site are similar enough to RCRA waste to make these regulations appropriate and relevant to this Site.

These standards are appropriate and relevant to the design, monitoring and performance of the groundwater extraction and treatment system, which will handle, treat and dispose of hazardous materials. Closure standards are also appropriate and relevant to capping of the Site. Onsite hazardous and solid wastes will be managed in accordance with these ARARs, including adequate security and administrative measures, including inspections, a groundwater monitoring program, a site closure and post closure plan and a public notification plan. Specifically, this remedy will comply with the provisions of New Hampshire's Hazardous Waste Management Act at N.H. Admin. Code He-P Ch. 1905 and of the Solid Waste Management Act, RSA Ch. 149-M and the Solid Waste Management Rules, N.H. Admin. Rules He-P Ch. 1901 listed in Appendix B, Tables 17 and 18.

Sludge generated by the groundwater treatment unit will be treated and/or disposed of at an offsite RCRA facility in accordance with federal and state requirements.

RCRA includes specific provisions restricting the placement of hazardous waste into a land-based unit, which includes a landfill. The Land Disposal Restrictions (LDRs) are not ARARs for the consolidated sediment in the wetland under the cap since this action does not involve placing hazardous waste in a land-based unit. The area of contamination at Coakley is comprised of the southern end of the landfill as well as adjoining wetlands located at the northwestern part of the Site. The sediments in the wetlands to be consolidated are contiguous to the Site, uninterrupted by roads, paths, railroad tracks or other easements or rights of ways. Sediments in the wetland result primarily from the existing temporary cover which has eroded from the slopes of the landfill and has filled in the wetland. Given the contiguous location of the wetlands to the landfill subjecting it to erosion, the landfill and wetlands constitute one area of contamination for CERCLA purposes and thus one unit for land disposal purposes. Therefore, movement of the sediment in the wetland to the landfill does not qualify as placement but is merely movement within the unit.

C. The Selected Remedial Action is Cost-Effective

In the Agency's judgment, the selected remedy, SC-4, is cost effective, i.e., the remedy affords overall effectiveness proportional to its costs. Once EPA identified alternatives that were protective of human health and the environment and that either attain or waive ARARs, EPA evaluated the overall effectiveness of each alternative by assessing the relevant three criteria - long term effectiveness and permanence; reduction in toxicity, mobility, and volume through treatment; and short term effectiveness. The relationship of the overall effectiveness of this remedial alternative was determined to be proportional to its costs.

A summary of the costs associated with each of the source control remedies are presented below. All costs are presented in net present costs.

COST COMPARISON OF SOURCE CONTROL ALTERNATIVES

		Capital Costs	O&M Costs ($/yr)	*Present Worth
SC-1	No Action	$ 820,000	43,000	2,120,000
SC-3	Capping Including Consolidation	8,800,000	80,000	11,200,000
SC-4	Capping/Onsite Groundwater Treatment	12,800,000	245,000	20,200,000
SC-5	Capping/Offsite Treatment and Disposal	13,200,000	190,000	18,900,000
SC-6	Onsite Solid Waste/ Treatment and Disposal/ Capping	45,300,000	285,000	53,900,000

Of the three alternatives that are protective and attain ARARs, SC-4, SC-5 and SC-6, EPA's selected remedy, SC-4, combines most cost-effective remedial alternative components that were evaluated. The remedy provides a degree of protectiveness proportionate to its costs. Groundwater extraction and treatment was estimated to be significantly less costly than incineration and/or solidification of the landfill waste which would cost approximately 265 percent more. Two of the less expensive alternatives, SC-1 (no-action) and SC-3 (capping with consolidation), did not meet ARARs since contamination above drinking water standards would have been allowed to migrate offsite. Alternative SC-5, offsite treatment

and disposal, although less expensive but comparable in costs to SC-4, was found to be more difficult to implement since it involves a municipal wastewater treatment facility accepting the groundwater. Additionally, this alternative may have an adverse impact on the wetlands adjacent to the Site due to the removal of significant amounts of groundwater from the area.

A summary of the costs for each of the elements of the selected remedy are presented below. All cost are net present costs.

TOTAL COSTS OF SELECTED REMEDY

Contaminated Media/Remedy	Capital	O&M	Total
Sediment	$ 42,000	0	42,000
Capping	5,205,000	953,000	6,158,000
Groundwater	7,523,000	6,447,000	13,970,000
TOTAL	12,770,000	7,390,000	20,160,000

TOTAL ESTIMATED COST: $ 20,200,000

D. **The Selected Remedy Utilizes Permanent Solutions and Alternative Treatment or Resource Recovery Technologies to the Maximum Extent Practicable**

Once the Agency identified those alternatives that attain ARARs and that are protective of human health and the environment, EPA identified which alternative utilizes permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. This determination was made by deciding which one of the identified alternatives provides the best balance of trade-offs among alternatives in terms of: 1) long-term effectiveness and permanence; 2) reduction of toxicity, mobility or volume through treatment; 3) short-term effectiveness; 4) implementability; and 5) cost. The balancing test emphasized long-term effectiveness and permanence and the reduction of toxicity, mobility and volume through treatment; and considered the preference for treatment as a principal element, the bias against offsite land disposal of untreated waste, and community and state acceptance. The selected remedy provides the best balance of trade-offs among the alternatives.

Alternative SC-4 was selected as the remedy because its long-term effectiveness and permanence and its ability to reduce toxicity, mobility and volume of contaminants through groundwater treatment was the most efficient of all alternatives in light of

implementability and cost concerns. The principal elements of the remedy consist of removing contamination from the groundwater under and around the landfill by collecting and treating the groundwater through air stripping prior to discharging it back to the ground or surface water. The air stripping process, along with capping, is a proven technique which provides a permanent solution for contaminated groundwater and has been used successfully at other hazardous waste cleanup sites.

This remedy was also selected over other alternatives because of its ability to achieve cleanup levels at a lower cost without the necessity of directly treating solid waste. As explained previously, there are no identifiable areas of high concentrations of contaminants onsite; thus there is no need to excavate and treat particular areas of the landfill. Groundwater treatment will effectively control migration of contaminants offsite.

Alterative SC-5 is similar to SC-4 in that it is effective in the long-term and will reduce toxicity, mobility and volume of contaminants. Alternative SC-6 is the most effective in both of these categories. However, when implementability and cost are factored in, SC-4 becomes the selected remedy. "When the alternatives provide similar long-term effectiveness and permanence and reduction of toxicity, mobility or volume, the other balancing criteria arise to distinguish the alternatives and play a more significant role in selecting the remedy. NCP Preamble, 55 Fed. Reg. 8725 (1990). Alternative SC-5 was not selected because it involves offsite treatment and disposal of groundwater at a publicly owned treatment plant. This component could be very difficult to implement since it involves municipal acceptance of groundwater. SC-6 was not selected because the large volume of low concentration levels of contaminants did not justify the cost of solidification/incineration.

E. The Selected Remedy Satisfies the Preference for Treatment Which Permanently and Significantly Reduces the Toxicity, Mobility or Volume of the Hazardous Substances as a Principal Element

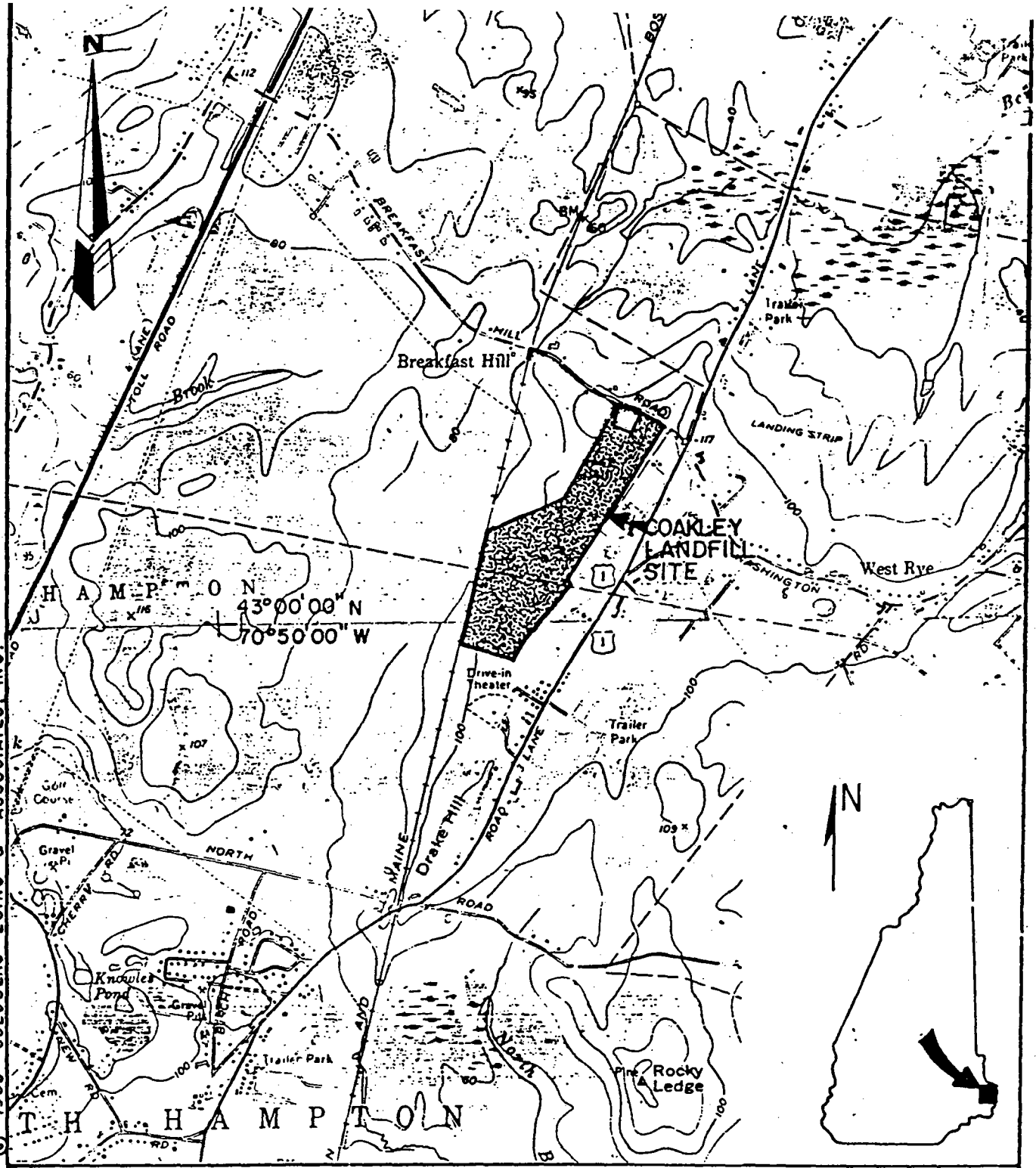
The principal element of the selected source control remedy is groundwater treatment. This element addresses the primary threat at the Site, contamination of the groundwater with VOCs and metals. The selected remedy satisfies the statutory preference for treatment as a principal element by treating the extracted groundwater in treatment processes which result in the removal of VOCs and metals.

XIII. STATE ROLE

The State of New Hampshire, Department of Environmental Services (DES) has reviewed the various alternatives and indicated its support for the selected remedy. The State has also reviewed the Remedial Investigation, Risk Assessment and the Feasibility Study to determine if the selected remedy is in compliance with applicable or relevant and appropriate State Environmental laws and regulations. The New Hampshire DES concurs with the selected remedy for the Coakley Landfill Superfund Site. A copy of the declaration of concurrence is attached as Appendix D.

APPENDIX A

FIGURES



FILE No. D-6683

FROM USGS: PORTSMOUTH, N.H. (1944)
HAMPTON, N.H. (1944)
QUADRANGLE MAPS

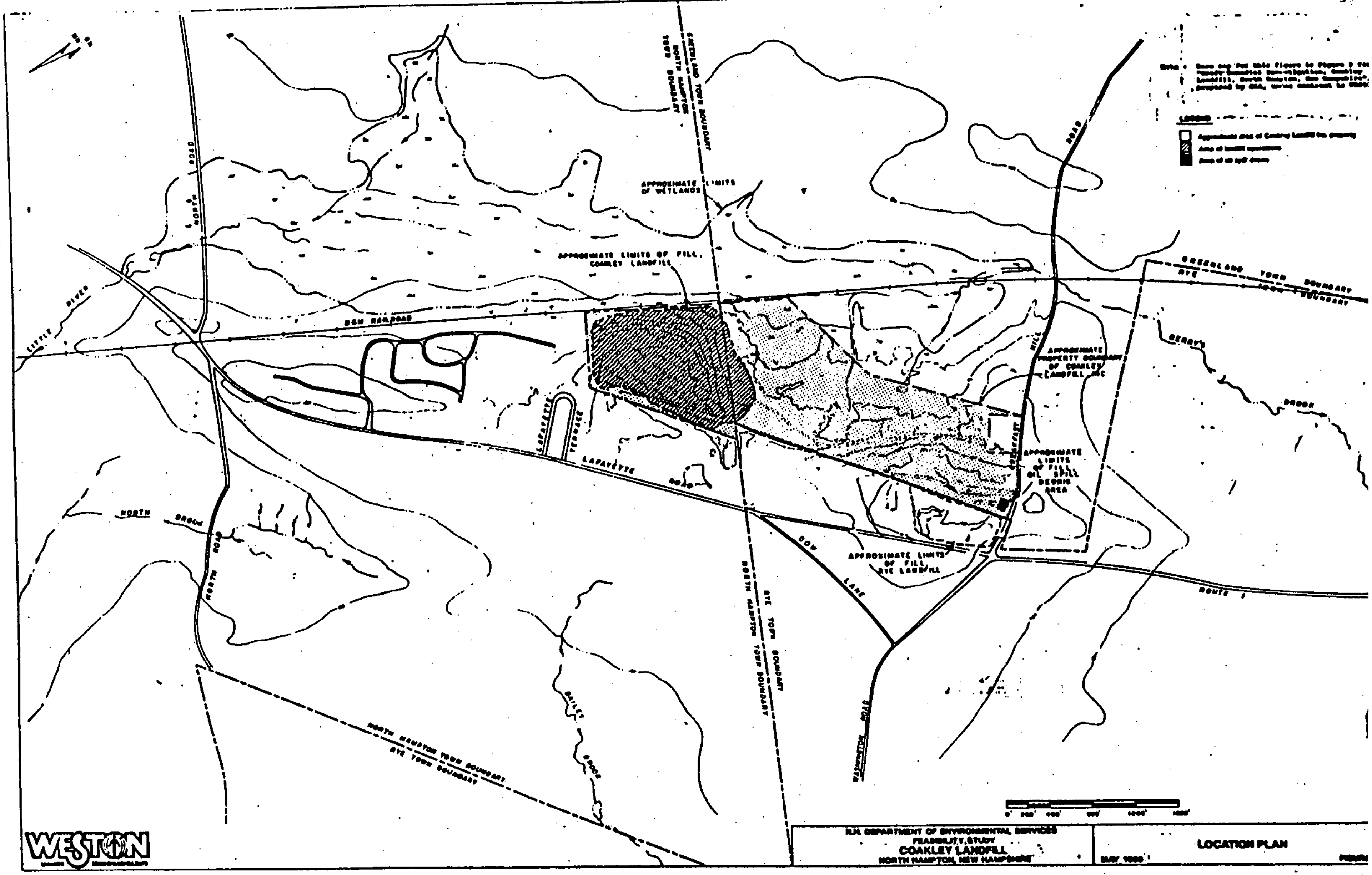
GZA/WESTON

REMEDIAL INVESTIGATION
COAKLEY SANITARY LANDFILL
NORTH HAMPTON, NEW HAMPSHIRE

LOCUS PLAN

OCT. 1988

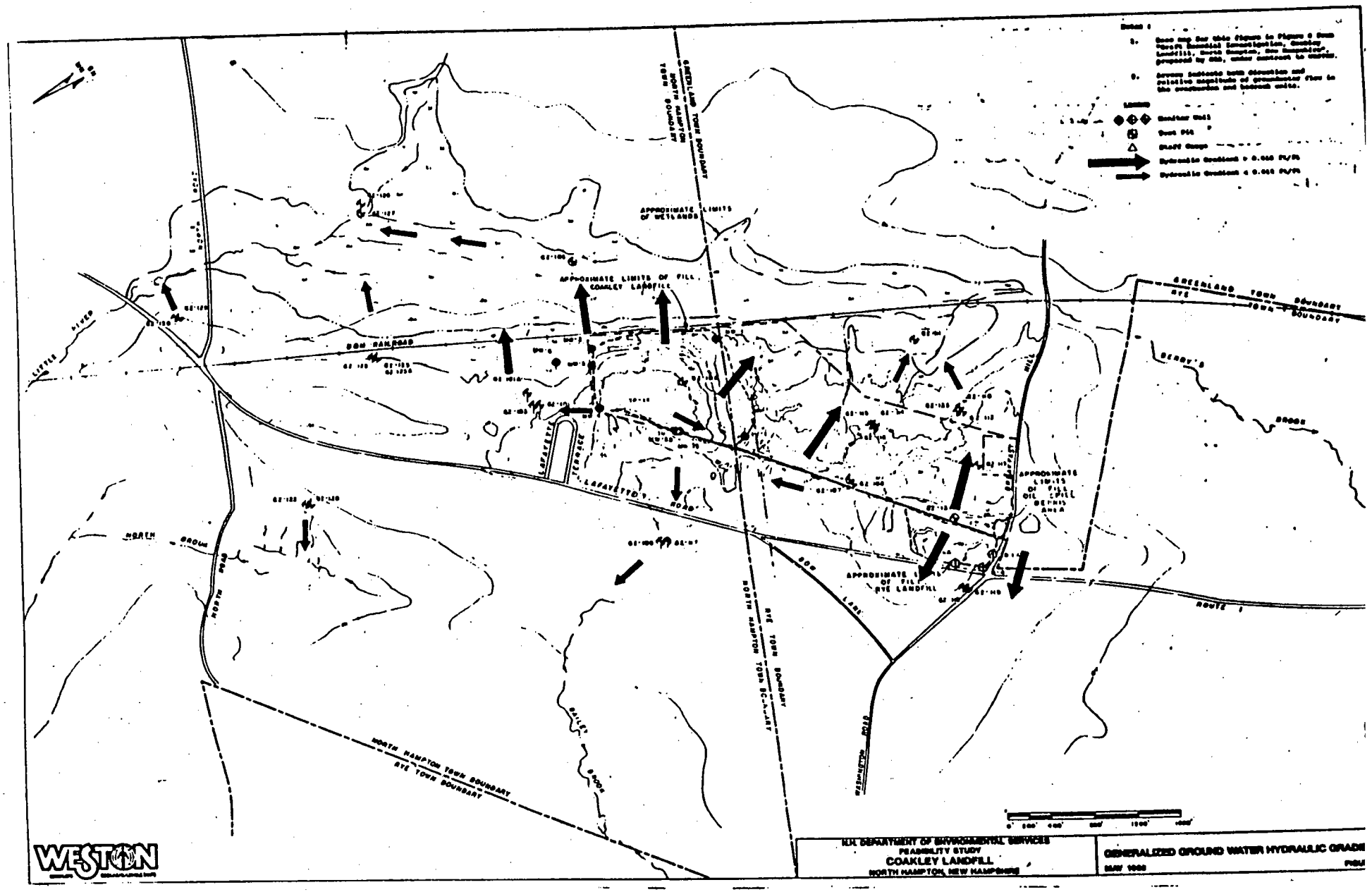
FIGURE No.1

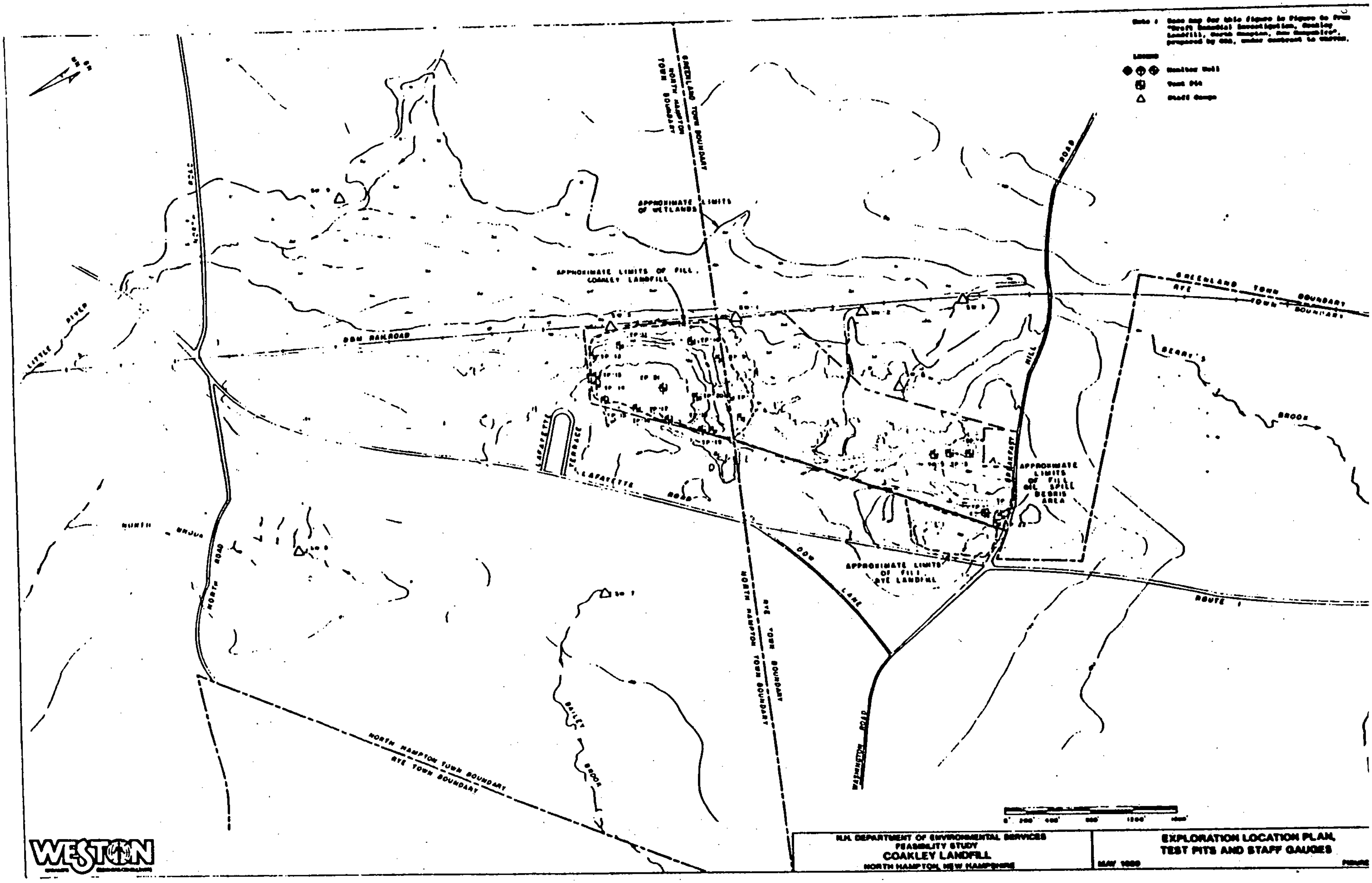


N.H. DEPARTMENT OF ENVIRONMENTAL SERVICES
FEASIBILITY STUDY
COAKLEY LANDFILL
NORTH HAMPTON, NEW HAMPSHIRE

MAY 1990

LOCATION PLAN

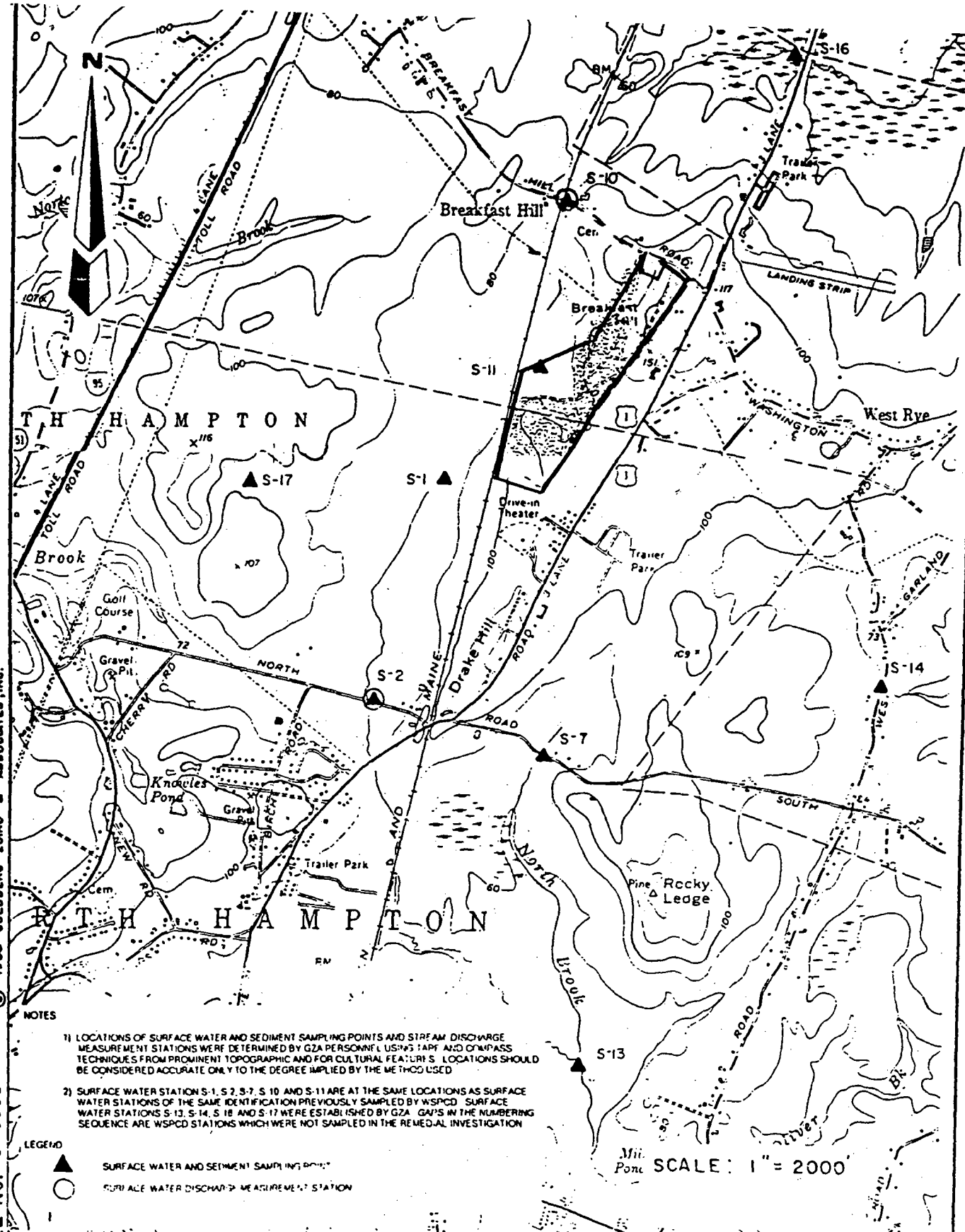

APPROXIMATE LIMITS OF WETLANDS
APPROXIMATE LIMITS OF FILL COAKLEY LANDFILL
APPROXIMATE LIMITS OF FILL RYE LANDFILL
APPROXIMATE LIMITS OF FILL OIL SPILL DEBRIS AREA
GREENLAND TOWN BOUNDARY
RYE TOWN BOUNDARY
NORTH HAMPTON TOWN BOUNDARY
DOW RAILROAD
LAFAYETTE TERRACE
LAFAYETTE ROAD
NORTH ROAD
ROUTE 1
WESTON
N.H. DEPARTMENT OF ENVIRONMENTAL SERVICES
FEASIBILITY STUDY
COAKLEY LANDFILL
NORTH HAMPTON, NEW HAMPSHIRE
GENERALIZED GROUND WATER HYDRAULIC GRADI
MAY 1988



N.H. DEPARTMENT OF ENVIRONMENTAL SERVICES
FEASIBILITY STUDY
COAKLEY LANDFILL
NORTH HAMPTON, NEW HAMPSHIRE

EXPLORATION LOCATION PLAN, TEST PITS AND STAFF GAUGES

MAY 1989



FILE No. 0-6683

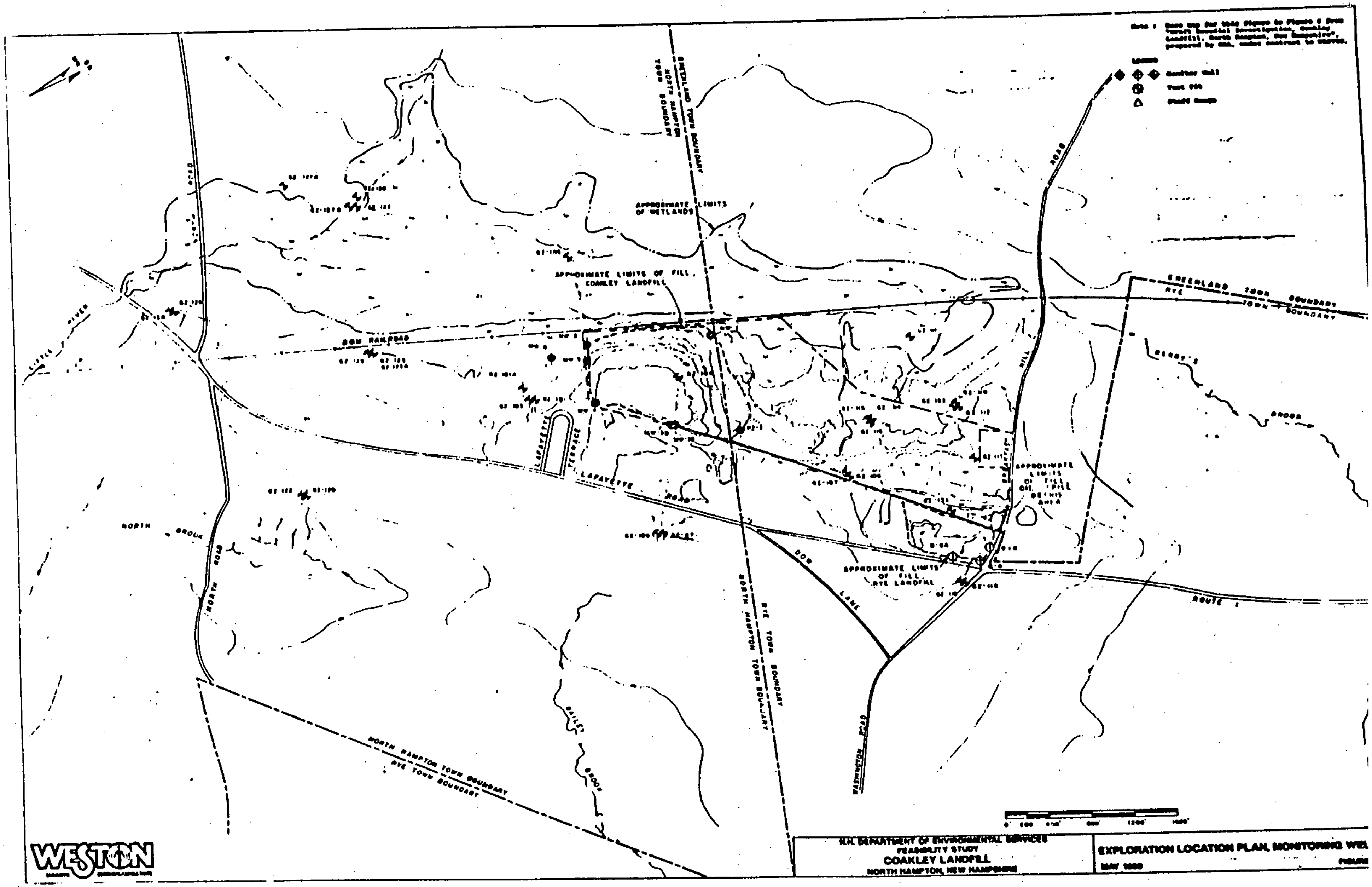
GZA / WESTON

REMEDIAL INVESTIGATION
COAKLEY SANITARY LANDFILL
NORTH HAMPTON, NEW HAMPSHIRE

SURFACE WATER AND SEDIMENT SAMPLING LOCATIONS

OCT. 1986

FIGURE No. 5


LEGEND
Monitor Well
Test Pit
Staff Gauge
APPROXIMATE LIMITS OF WETLANDS
APPROXIMATE LIMITS OF FILL, COAKLEY LANDFILL
APPROXIMATE LIMITS OF FILL OIL SPILL DEBRIS AREA
APPROXIMATE LIMITS OF FILL, RYE LANDFILL
GREENLAND TOWN BOUNDARY
NORTH HAMPTON TOWN BOUNDARY
RYE TOWN BOUNDARY
B&M RAILROAD
LAFAYETTE ROAD
LAFAYETTE TERRACE
DOW LANE
WASHINGTON ROAD
ROUTE 1
NORTH ROAD
BAILEY BROOK
NORTH BROOK
BERRY'S BROOK
LITTLE RIVER
N.H. DEPARTMENT OF ENVIRONMENTAL SERVICES
FEASIBILITY STUDY
COAKLEY LANDFILL
NORTH HAMPTON, NEW HAMPSHIRE
EXPLORATION LOCATION PLAN, MONITORING WEL
MAY 1989
FIGURE
WESTON

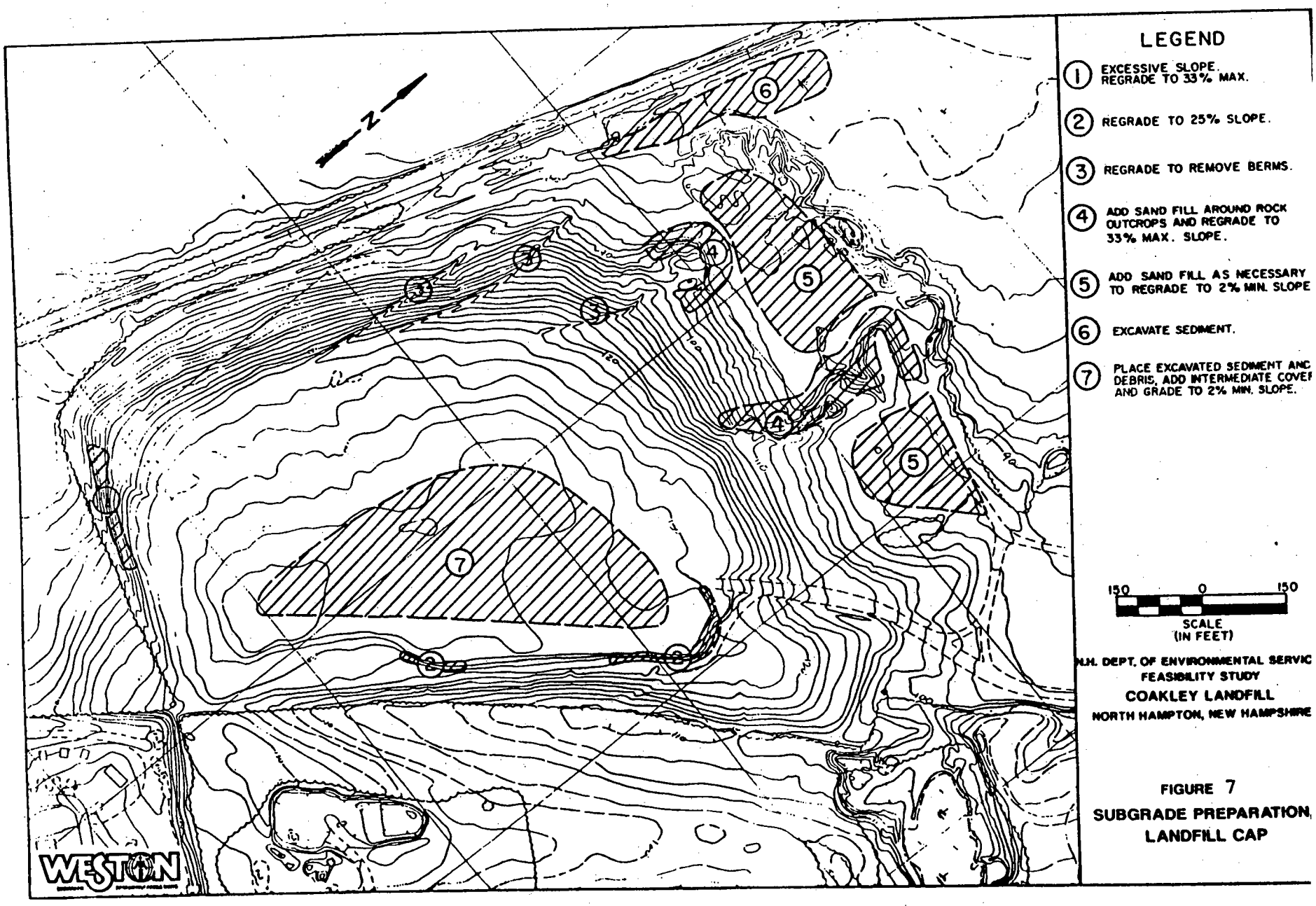
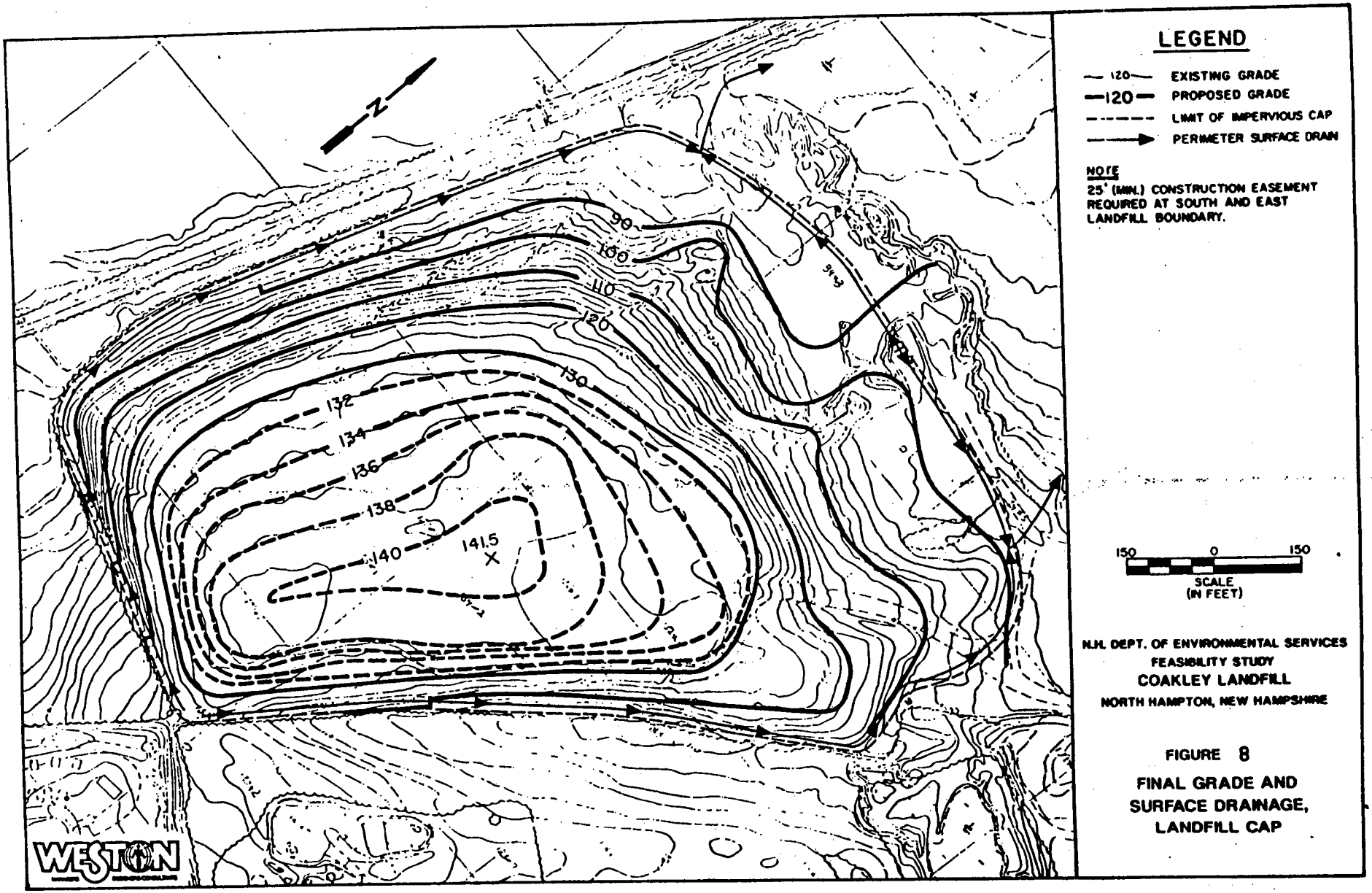


FIGURE 7
SUBGRADE PREPARATION, LANDFILL CAP



LEGEND

— 120 — EXISTING GRADE

—120— PROPOSED GRADE

- - - - - - LIMIT OF IMPERVIOUS CAP

——→ PERIMETER SURFACE DRAIN

NOTE

25' (MIN.) CONSTRUCTION EASEMENT REQUIRED AT SOUTH AND EAST LANDFILL BOUNDARY.

150 0 150

SCALE (IN FEET)

N.H. DEPT. OF ENVIRONMENTAL SERVICES

FEASIBILITY STUDY

COAKLEY LANDFILL

NORTH HAMPTON, NEW HAMPSHIRE

FIGURE 8

FINAL GRADE AND SURFACE DRAINAGE, LANDFILL CAP

FIGURE 9
CROSS-SECTION OF A TYPICAL
MULTIMEDIA CAP

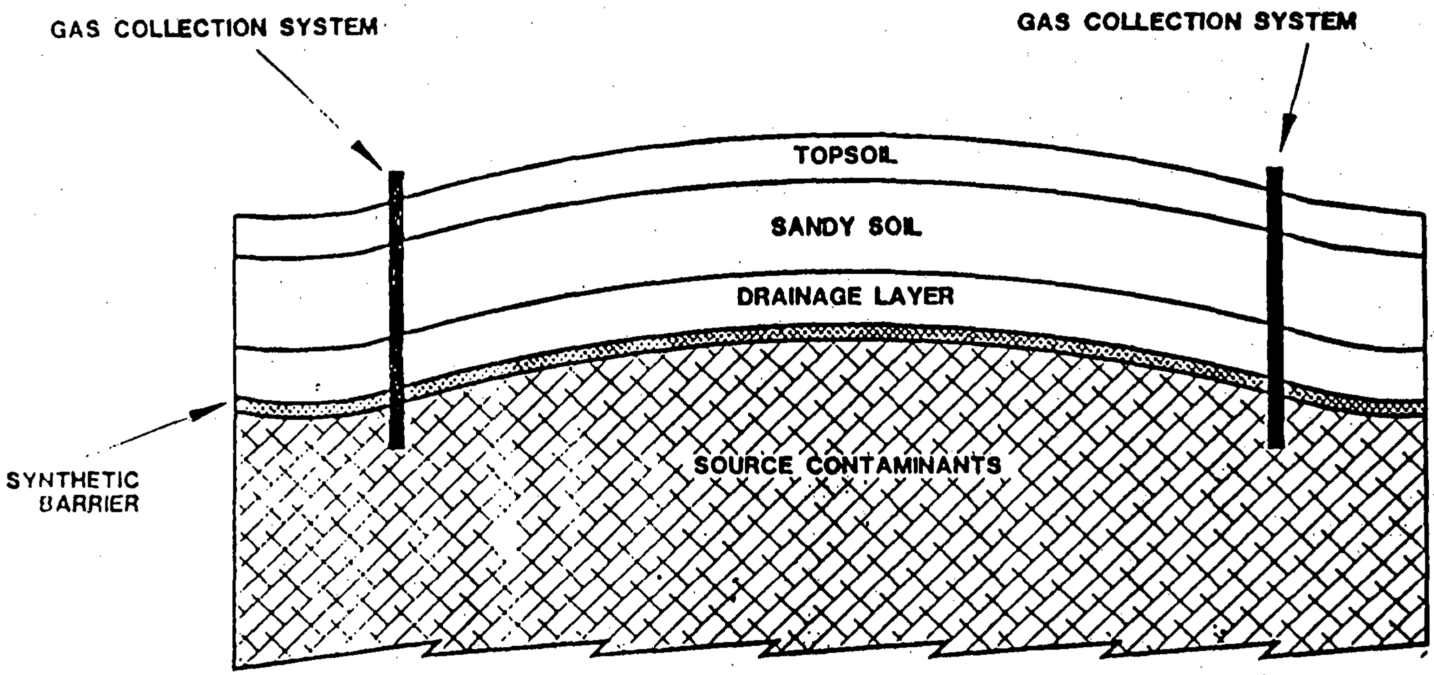
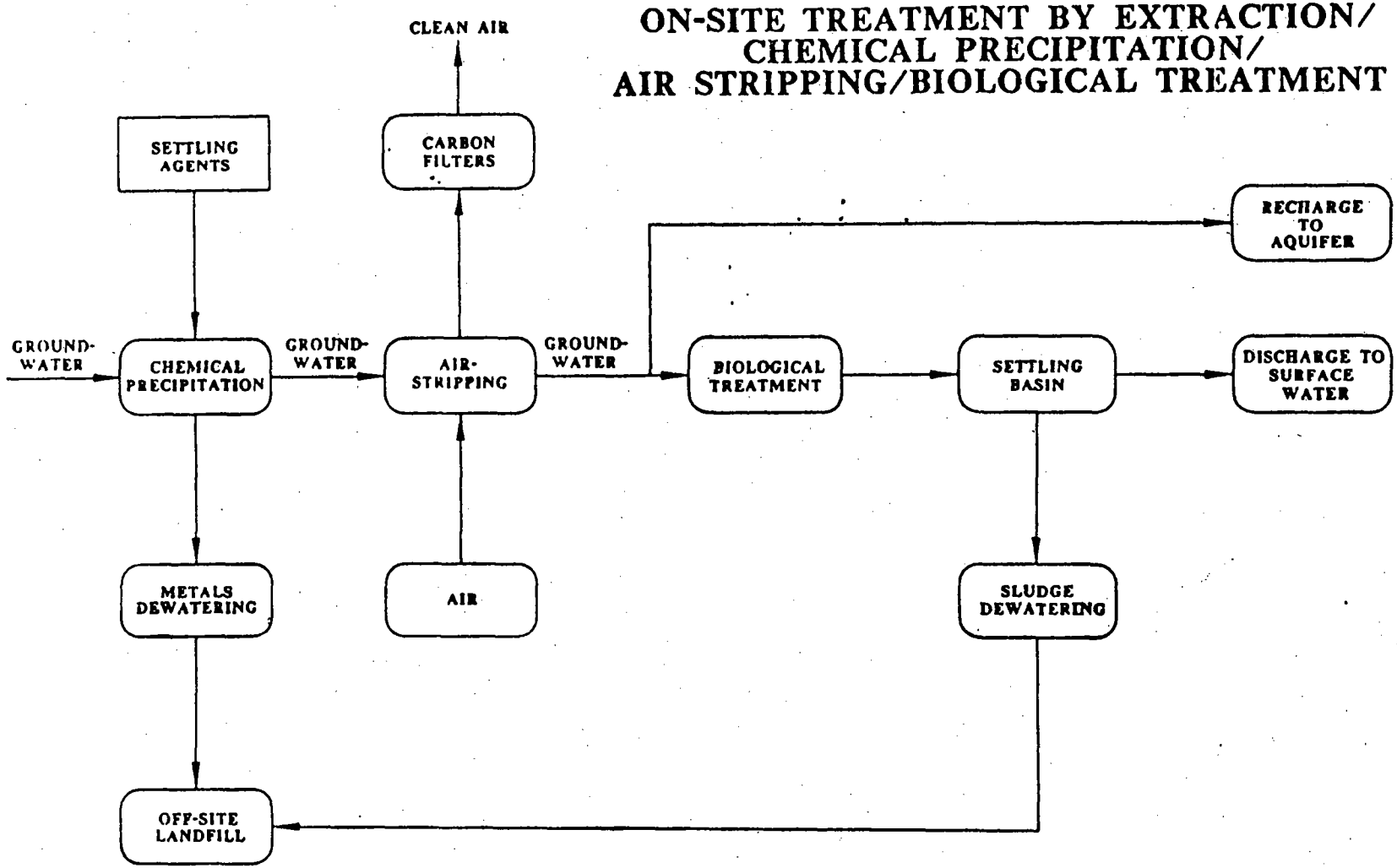
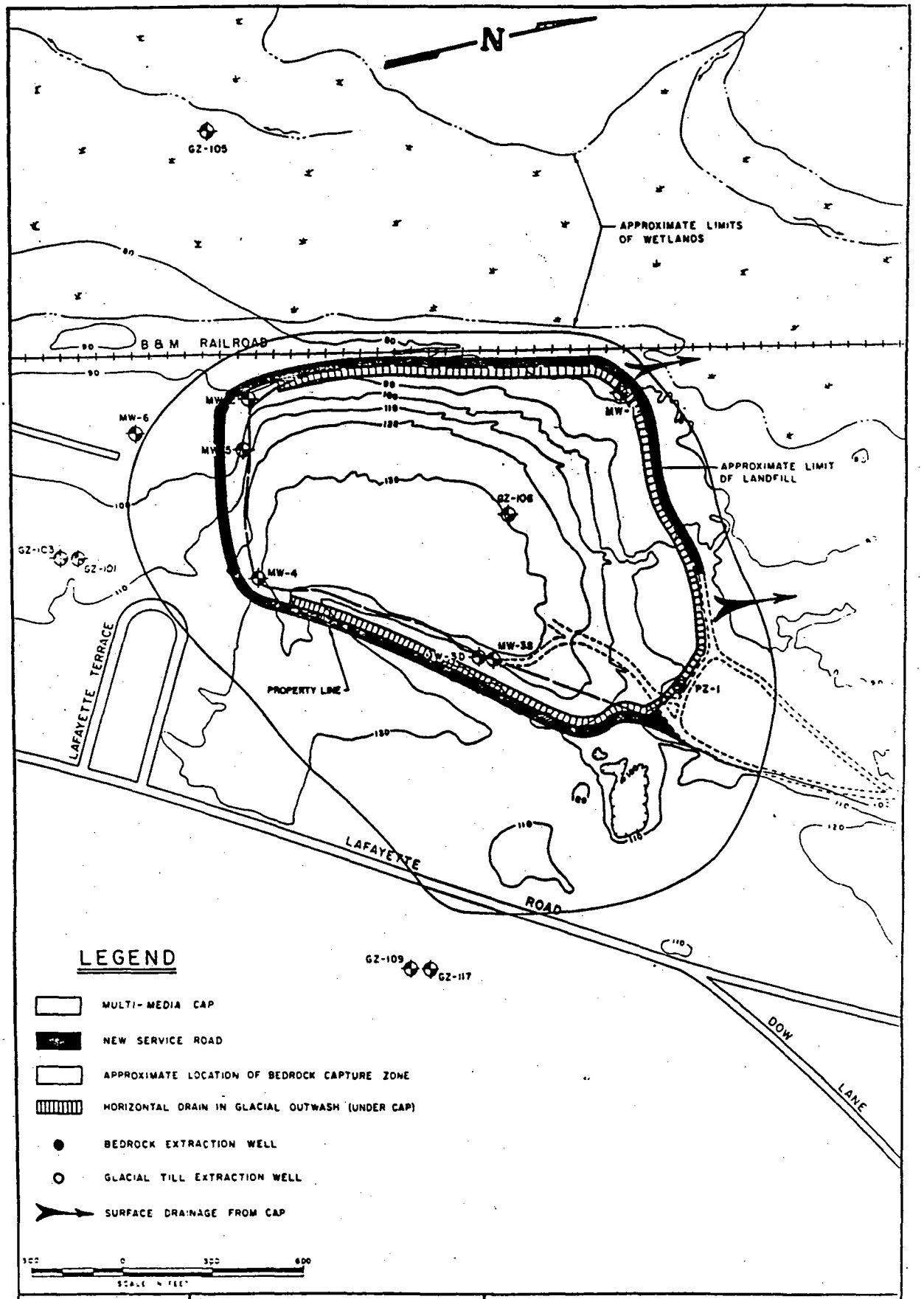


FIGURE 10
ON-SITE TREATMENT BY EXTRACTION/ CHEMICAL PRECIPITATION/ AIR STRIPPING/BIOLOGICAL TREATMENT





WESTON

N.H. DEPT. OF ENVIRONMENTAL SERVICES
FEASIBILITY STUDY
COAKLEY LANDFILL
NORTH HAMPTON, NEW HAMPSHIRE

FIGURE 11
GROUNDWATER EXTRACTION SYSTEM

APPENDIX B

TABLES

TABLE 1

SELECTED INDICATOR SUBSTANCES

FOR SOILS

- Arsenic
- Barium
- Benzo(a)pyrene
- Bis(2-ethylhexyl) phthalate
- Cadmium
- DDT
- Lead
- Nickel
- Tetrachloroethylene

FOR GROUNDWATER

- Arsenic
- Barium
- Benzene
- Chlorobenzene
- Chromium
- 1,2-Dichloroethylene
- Diethyl phthalate
- Nickel
- Phenol

SURFACE WATER

- Arsenic
- Barium
- Methyl Ethyl Ketone
- Toluene

SEDIMENTS

- Arsenic
- Barium
- Cadmium
- Lead
- Nickel

TABLE 2: SUMMARY OF CONTAMINANTS OF CONCERN IN SOIL

Contaminants of Concern	Geometric Mean (mg/kg)	Maximum (mg/kg)	Frequency of Detection
Arsenic	25	32	7/8
Barium	59	133	8/8
Benzo(a)pyrene	485	490	2/8
Cadmium	5	11	8/8
DDT	44	61	2/8
Lead	69	435	8/8
Nickel	57	96	8/8

TABLE 3: SUMMARY OF CONTAMINANTS OF CONCERN IN GROUND WATER

Contaminants of Concern	Geometric Mean (ug/l)	Maximum (ug/l)	Frequency of Detection
Arsenic	15.1	89	11/18
2-Butanone (MEK)	97.3	2700	13/88
Barium	68.9	368	14/15
Benzene	8.6	60	34/91
Chlorobenzene	9.7	182	12/88
Chromium	19.7	330	5/16
1,2-Dichloroethylene	15.7	72	4/88
Diethyl phthalate	16.7	230	5/15
Nickel	22.6	200	14/15
Phenol	39.0	120	3/15

TABLE 4: SUMMARY OF CONTAMINANTS OF CONCERN IN SURFACE WATER

Contaminants of Concern	Geometric Mean (ug/l)	Maximum (ug/l)	Frequency of Detection
Arsenic	1	2.2	4/7
Barium	85.2	227	2/7
2-Butanone (MEK)	-	8.4	1/9
Toluene	-	6.6	1/9

TABLE 5: SUMMARY OF CONTAMINANTS OF CONCERN IN SEDIMENTS

Contaminants of Concern	Geometric Mean (mg/kg)	Maximum (mg/kg)	Frequency of Detection
Arsenic	6.9	46	9/9
Barium	29	59	7/9
Cadmium	2.4	2.8	4/9
Lead	34.7	114	9/9
Nickle	22.2	33	6/9

Table 7
ARARs FOR ALTERNATIVE SC-1
COAKLEY LANDFILL
NORTH HAMPTON, NEW HAMPSHIRE

ARAR's	Requirement Synopsis	Status/Action to be Taken to Attain ARAR's
GROUNDWATER		
SDWA - Maximum Contaminant Levels (MCLs) (40 CFR 141.11 - 141.16)	MCLs have been promulgated for a number of common organic and inorganic contaminants. These levels regulate the contaminants in public drinking water supplies, but may also be considered relevant and appropriate for groundwater aquifers potentially used for drinking water.	Not Attained
WS 410	New Hampshire Groundwater Quality Criteria have been promulgated for a number of contaminants.	Not Attained (a)
WS 300	New Hampshire drinking water standards regulate the concentration of contaminants in public drinking water supplies.	Not Attained (a)
EPA Risk Reference Doses (RfDs)	RfDs are dose levels developed based on the noncarcinogenic effects and are used to develop Hazard Indices. A Hazard Index of less than or equal to 1 is considered acceptable.	Not Attained
Federal Ambient Water Quality Criteria (AWQC) - Adjusted for Drinking Water	Federal AWQC are health-based criteria which have been developed for 95 carcinogenic and non-carcinogenic compounds.	Not Attained
EPA Carcinogen Assessment Group Potency Factors	Potency Factors are developed by the EPA from Health Effects Assessments or evaluation by the Carcinogenic Assessment Group and are used to develop excess cancer risks. A range of 10^-4 to 10^-7 is considered accepptabla.	Not Attained
SURFACE WATER		
WS 430, Water Quality Standards	New Hampshire Surface Water Quality Standards are given for toxics, dissolved oxygen, temperature increase, pH, and total coliform. Federal AWQC were adopted by NH in Ws 430.	Not Attained (a)
Federal Ambient Water Quality Criteria (AWQC)	Federal AWQC are health-based criteria which have been developed for 95 carcinogenic and noncarcinogenic compounds.	Not Attained (a)

Table 7
ARARs FOR ALTERNATIVE SC-1
COAKLEY LANDFILL
NORTH HAMPTON, NEW HAMPSHIRE

ARAR's	Requirement Synopsis	Status/Action to be Taken to Attain ARAR's
AIR		
CAA - National Ambient Air Quality Standards (NAAQS) - 40 CFR 52	Refer to State Implementation Plan and NHDES Air Pollution Regulations.	Attained
NH DES - Air Pollution Regulations (Air)	a	Attained (a)
Threshold Limit Values (TLVs)	These standards were issued as consensus standards for controlling air quality in work place environments.	Attained
RCRA - Groundwater Protection (40 CFR 264.30 - 264.31)	This regulation details requirements for a groundwater monitoring program to be installed at the site.	A groundwater monitoring program consistent with this regulation will be developed and implemented.
OSHA - General Industry Standards (29 CFR Part 1910)	This regulation specifies the 8-hour time-weighted average concentration for various organic compounds.	Proper respiratory equipment will be worn if it is impossible to maintain the work atmosphere below the TWA's
OSHA - Safety and Health Standards (29 CFR Part 1926)	This regulation specifies the type of safety equipment and procedures to be followed during site remediation.	All appropriate safety equipment will be on-site. In addition, safety procedures will be followed during on-site activities.
OSHA - Recordkeeping, Reporting, and Related Regulations	This regulation outlines the record- keeping and reporting requirements for an employer under OSHA.	These requirements apply to all site contractors and subcontractors and must be followed during all site work.

a: State of New Hampshire ARARs are included in Appendix H.

Table 8
ARARs FOR ALTERNATIVE SC-3
COAKLEY LANDFILL
NORTH HAMPTON, NEW HAMPSHIRE

ARAR's	Requirement Synopsis	Status/Action to be Taken to Attain ARAR's
GROUNDWATER		
SDWA - Maximum Contaminant Levels (MCLs) (40 CFR 141.11 - 141.16)	MCLs have been promulgated for a number of common organic and inorganic contaminants. These levels regulate the contaminants in public drinking water supplies, but may also be considered relevant and appropriate for groundwater aquifers potentially used for drinking water.	Not Attained
WS 410	New Hampshire Groundwater Quality Criteria have been promulgated for a number of contaminants.	Not Attained (a)
WS 300	New Hampshire drinking water standards regulate the concentration of contaminants in public drinking water supplies.	Not Attained (a)
EPA Risk Reference Doses (RfDs)	RfDs are dose levels developed based on the noncarcinogenic effects and are used to develop Hazard Indices. A Hazard Index of less than or equal to 1 is considered acceptable.	Attained
Federal Ambient Water Quality Criteria (AWQC) - Adjusted for Drinking Water	Federal AWQC are health-based criteria which have been developed for 95 carcinogenic and non-carcinogenic compounds.	Not Attained
EPA Carcinogen Assessment Group Potency Factors	Potency Factors are developed by the EPA from Health Effects Assessments or evaluation by the Carcinogenic Assessment Group and are used to develop excess cancer risks. A range of 10^-4 to 10^-7 is considered accepptable.	Not Attained
SURFACE WATER		
WS 430, Water Quality Standards	New Hampshire Surface Water Quality Standards are given for toxics, dissolved oxygen, temperature increase, pH, and total coliform. Federal AWQC were adopted by NH in Ws 430.	Attained (a)
Federal Ambient Water Quality Criteria (AWQC)	Federal AWQC are health-based criteria which have been developed for 95 carcinogenic and noncarcinogenic compounds.	Attained (a)

Table 8
ARARs FOR ALTERNATIVE SC-3
COAKLEY LANDFILL
NORTH HAMPTON, NEW HAMPSHIRE

ARAR's	Requirement Synopsis	Status/Action to be Taken to Attain ARAR's
AIR		
CAA - National Ambient Air Quality Standards (NAAQS) - 40 CFR 52	Refer to State Implementation Plan and NHDES Air Pollution Regulations.	Attained
NH DES - Air Pollution Regulations (Air)	a	Attained (a)
Threshold Limit Values (TLVs)	These standards were issued as consensus standards for controlling air quality in work place environments.	Attained
WETLANDS		
Clean Water Act (CWA) - Section 404	Under this requirement, no activity that adversely affects a wetland shall be permitted if a practicable alternative that has less affect is available.	Excavation of contaminated sediments west of the landfill will be accomplished with minimal effects on the wetland.
Fish and Wildlife Coordination Act (16 U.S.C. 661)	This regulation requires that any Federal Agency that proposes to modify a body of water must consult with the U.S. Fish and Wildlife Services. This requirement is addressed under CWA Section 404 requirements.	Prior to excavation of contaminated sediments EPA will consult the U.S. Fish and Wildlife Service.
Wetlands Executive Order (EO 11990)	Under this regulation, Federal agencies are required to minimize the destruction, loss or degradation of wetlands and preserve and enhance natural and beneficial values of wetlands.	Excavation of contaminated sediments west of the landfill will be accomplished with minimal effects on the wetland.
Floodplains Executive Order (EO 11888)	Federal Agencies are required to reduce the risk of flood loss, to minimize impact of floods, and to restore and preserve the natural and beneficial value of floodplains.	Excavation of contaminated sediments west of the landfill will be accomplished such that no flood hazard is created and the area is restored to its previous condition.

Table 8
ARARs FOR ALTERNATIVE SC-3
COAKLEY LANDFILL
NORTH HAMPTON, NEW HAMPSHIRE

ARAR's	Requirement Synopsis	Status/Action to be Taken to Attain ARAR's
RCRA - Standards for Owners and Operators of Permitted Hazardous Waste Facilities (40 CFR 264)	General facility requirements outline general waste analysis, security measures, inspections, and training requirements.	The cap and gas incineration system will be constructed, and operated in accordance with these requirements. All workers will be properly trained.
RCRA - Groundwater Protection (40 CFR 264.30 - 264.31)	This regulation details requirements for a groundwater monitoring program to be installed at the site.	A groundwater monitoring program consistent with this regulation will be developed and implemented.
RCRA - Closure and Post-closure (40 CFR 264.110 - 264.120)	This regulation details specific requirements for closure and post-closure of hazardous waste facilities.	A monitoring and maintenance program for the capping system will be implemented in accordance with this regulation.
OSHA - General Industry Standards (29 CFR Part 1910)	This regulation specifies the 8-hour time-weighted average concentration for various organic compounds.	Proper respiratory equipment will be worn if it is impossible to maintain the work atmosphere below the TWA's
OSHA - Safety and Health Standards (29 CFR Part 1926)	This regulation specifies the type of safety equipment and procedures to be followed during site remediation.	All appropriate safety equipment will be on-site. In addition, safety procedures will be followed during on-site activities.
OSHA - Recordkeeping, Reporting, and Related Regulations	This regulation outlines the record- keeping and reporting requirements for an employer under OSHA.	These requirements apply to all site contractors and subcontractors and must be followed during all site work.
US EPA Off-site Policy	This regulation requires that off-site treatment and/or disposal be performed at a facility which is in compliance with EPA regulations.	Off-site disposal of perched leachate will be performed in accordance with this policy.
DOT Rules for Transportation of Hazardous Materials (49 CFR Parts 107, 171.10171.5)	This regulation outlines procedures for the packaging, labeling, manifesting, and transporting of hazardous materials.	Perched leachate will be manifested and transported in bulk to a licensed off-site TSD facility in compliance with these regulations.
N.H. DES New Hampshire Solid Waste Regulations He-P 1901.	This regulation provides standards for solid waste disposal facilities.	Standards for solid waste disposal facilities will be followed when the landfill is capped. (a)
N.H. DES - Air Pollution Regulations (Air)	This regulation outlines the standards and requirements for air pollution control in the State of New Hampshire; all provisions,	Emissions from excavation and gas incineration system will be maintained below standards using emissions controls, as necessary. (a)

Table 8
ARARs FOR ALTERNATIVE SC-3
COAKLEY LANDFILL
NORTH HAMPTON, NEW HAMPSHIRE

ARAR's	Requirement Synopsis	Status/Action to be Taken to Attain ARAR's
	procedures, and definitions are described.	
New Hampshire Wetlands Board, RSA 483-A, and RSA 149-8a.	These regulations are promulgated under the N.H. Wetlands Board which regulates dredging, filling, altering or polluting inland wetlands.	Excavation of contaminated sediments west of the landfill will be accomplished with minimal effects on the wetland. (a)
New Hampshire Hazardous Waste Rules, He-P 1905.	These regulations outline the criteria for the construction, operations, and maintenance of a new facility or increase in an existing facility for the storage, treatment, or disposal of hazardous waste.	The disposal of material on-site and the constuction and operation of the treatment facility will be performed in accordance with these regulations. (a)

a: State of New Hampshire ARARs are included in Appendix H.

Table 9
ARARs FOR ALTERNATIVE SC-4
COAKLEY LANDFILL
NORTH HAMPTON, NEW HAMPSHIRE

ARAR's	Requirement Synopsis	Status/Action to be Taken to Attain ARAR's
GROUNDWATER		
SDWA - Maximum Contaminant Levels (MCLs) (40 CFR 141.11 - 141.16)	MCLs have been promulgated for a number of common organic and inorganic contaminants. These levels regulate the contaminants in public drinking water supplies, but may also be considered relevant and appropriate for groundwater aquifers potentially used for drinking water.	Attained
WS 410	New Hampshire Groundwater Quality Criteria have been promulgated for a number of contaminants.	Attained (a)
WS 300	New Hampshire drinking water standards regulate the concentration of contaminants in public drinking water supplies.	Attained (a)
EPA Risk Reference Doses (RfDs)	RfDs are dose levels developed based on the noncarcinogenic effects and are used to develop Hazard Indices. A Hazard Index of less than or equal to 1 is considered acceptable.	Attained
Federal Ambient Water Quality Criteria (AWQC) - Adjusted for Drinking Water	Federal AWQC are health-based criteria which have been developed for 95 carcinogenic and non-carcinogenic compounds.	Attained
EPA Carcinogen Assessment Group Potency Factors	Potency Factors are developed by the EPA from Health Effects Assessments or evaluation by the Carcinogenic Assessment Group and are used to develop excess cancer risks. A range of 10^-4 to 10^-7 is considered accepptable.	Attained
SURFACE WATER		
WS 430, Water Quality Standards	New Hampshire Surface Water Quality Standards are given for toxics, dissolved oxygen, temperature increase, pH, and total coliform. Federal AWQC were adopted by NH in Ws 430.	Attained (a)
Federal Ambient Water Quality Criteria (AWQC)	Federal AWQC are health-based criteria which have been developed for 95 carcinogenic and noncarcinogenic compounds.	Attained (a)

Table 9
ARARs FOR ALTERNATIVE SC-4
COAKLEY LANDFILL
NORTH HAMPTON, NEW HAMPSHIRE

ARAR's	Requirement Synopsis	Status/Action to be Taken to Attain ARAR's
AIR		
CAA - National Ambient Air Quality Standards (NAAQS) - 40 CFR 52	Refer to State Implementation Plan and NHDES Air Pollution Regulations.	Attained
NH DES - Air Pollution Regulations (Air)	a	Attained (a)
Threshold Limit Values (TLVs)	These standards were issued as consensus standards for controlling air quality in work place environments.	Attained
WETLANDS		
Clean Water Act (CWA) - Section 404	Under this requirement, no activity that adversely affects a wetland shall be permitted if a practicable alternative that has less affect is available.	Excavation of contaminated sediments west of the landfill will be accomplished with minimal effects on the wetland.
Fish and Wildlife Coordination Act (16 U.S.C. 661)	This regulation requires that any Federal Agency that proposes to modify a body of water must consult with the U.S. Fish and Wildlife Services. This requirement is addressed under CWA Section 404 requirements.	Prior to excavation of contaminated sediments and discharge of treated groundwater to the onsite surface water, EPA will consult the U.S. Fish and Wildlife Service.
Wetlands Executive Order (EO 11990)	Under this regulation, Federal agencies are required to minimize the destruction, loss or degradation of wetlands and preserve and enhance natural and beneficial values of wetlands.	Excavation of contaminated sediments west of the landfill will be accomplished with minimal effects on the wetland.
Floodplains Executive Order (EO 11888)	Federal Agencies are required to reduce the risk of flood loss, to minimize impact of floods, and to restore and preserve the natural and beneficial value of floodplains.	Excavation of contaminated sediments west of the landfill and discharge of treated groundwater will accomplished such that no flood hazard is created and the area is restored to its previous

Table 9
ARARs FOR ALTERNATIVE SC-4
COAKLEY LANDFILL
NORTH HAMPTON, NEW HAMPSHIRE

ARAR's	Requirement Synopsis	Status/Action to be Taken to Attain ARAR's
		condition.
RCRA - Standards for Owners and Operators of Permitted Hazardous Waste Facilities (40 CFR 264)	General facility requirements outline general waste analysis, security measures, inspections, and training requirements.	The cap, gas incineration groundwater treatment system will be designed, constructed, and operated in accordance with these requirements. All workers will be properly trained.
RCRA - Groundwater Protection (40 CFR 264.30 - 264.31)	This regulation details requirements for a groundwater monitoring program to be installed at the site.	A groundwater monitoring program consistent with this regulation will be developed and implemented.
RCRA - Closure and Post-closure (40 CFR 264.110 - 264.120)	This regulation details specific requirements for closure and post-closure of hazardous waste facilities.	A monitoring and maintenance program for the capping system will be implemented in accordance with this regulation.
OSHA - General Industry Standards (29 CFR Part 1910)	This regulation specifies the 8-hour time-weighted average concentration for various organic compounds.	Proper respiratory equipment will be worn if it is impossible to maintain the work atmosphere below the TWA's
OSHA - Safety and Health Standards (29 CFR Part 1926)	This regulation specifies the type of safety equipment and procedures to be followed during site remediation.	All appropriate safety equipment will be on-site. In addition, safety procedures will be followed during on-site activities.
OSHA - Recordkeeping, Reporting, and Related Regulations	This regulation outlines the record- keeping and reporting requirements for an employer under OSHA.	These requirements apply to all site contractors and subcontractors and must be followed during all site work.
RCRA - Land Disposal Restrictions (40 CFR 268)	This regulation outlines land disposal requirements and restrictions for hazardous wastes.	Sludge from the groundwater treatment unit which fails the TCLP extraction procedure will be treated to the Best Demonstrated Available Technology levels before being placed into a at an off-site facility.
US EPA Off-site Policy	This regulation requires that off-site treatment and/or disposal be performed at a facility which is in compliance with EPA regulations.	Off-site disposal of sludge from the groundwater treatment unit will be performed in accordance with this policy.
DOT Rules for Transportation of Hazardous Materials (49 CFR Parts 107, 171.10171.5)	This regulation outlines procedures for the packaging, labeling, manifesting, and transporting of hazardous materials.	Sludge from the groundwater treatment unit will be packaged, manifested, and transported to a licensed off-site TSD facility in compliance with these regulations.

Table 9
ARARs FOR ALTERNATIVE SC-4
COAKLEY LANDFILL
NORTH HAMPTON, NEW HAMPSHIRE

ARAR's	Requirement Synopsis	Status/Action to be Taken to Attain ARAR's
N.H. DES New Hampshire Solid Waste Regulations He-P 1901.	This regulation provides standards for solid waste disposal facilities.	Standards for solid waste disposal facilities will be followed when the landfill is capped. (a)
N.H. DES - Air Pollution Regulations (Air)	This regulation outlines the standards and requirements for air pollution control in the State of New Hampshire; all provisions, procedures, and definitions are described.	Emissions from excavation, air stripper and gas incineration system will be maintained below standards using emissions controls, as necessary. (a)
New Hampshire Wetlands Board, RSA 483-A, and RSA 149-8a.	These regulations are promulgated under the N.H. Wetlands Board which regulates dredging, filling, altering or polluting inland wetlands.	Excavation of contaminated sediments west of the landfill will be accomplished with minimal effects on the wetland. (a)
New Hampshire Hazardous Waste Rules, He-P 1905.	These regulations outline the criteria for the construction, operations, and maintenance of a new facility or increase in an existing facility for the storage, treatment, or disposal of hazardous waste.	The disposal of material on-site and the constuction and operation of the treatment facility will be performed in accordance with these regulations. (a)

a: State of New Hampshire ARARs are included in Appendix H.

Table 10
ARARs FOR ALTERNATIVE SC-5
COAKLEY LANDFILL
NORTH HAMPTON, NEW HAMPSHIRE

ARAR's	Requirement Synopsis	Status/Action to be Taken to Attain ARAR's
GROUNDWATER		
SDWA - Maximum Contaminant Levels (MCLs) (40 CFR 141.11 - 141.16)	MCLs have been promulgated for a number of common organic and inorganic contaminants. These levels regulate the contaminants in public drinking water supplies, but may also be considered relevant and appropriate for groundwater aquifers potentially used for drinking water.	Attained
WS 410	New Hampshire Groundwater Quality Criteria have been promulgated for a number of contaminants.	Attained (a)
WS 300	New Hampshire drinking water standards regulate the concentration of contaminants in public drinking water supplies.	Attained (a)
EPA Risk Reference Doses (RfDs)	RfDs are dose levels developed based on the noncarcinogenic effects and are used to develop Hazard Indices. A Hazard Index of less than or equal to 1 is considered acceptable.	Attained
Federal Ambient Water Quality Criteria (AWQC) - Adjusted for Drinking Water	Federal AWQC are health-based criteria which have been developed for 95 carcinogenic and non-carcinogenic compounds.	Attained
EPA Carcinogen Assessment Group Potency Factors	Potency Factors are developed by the EPA from Health Effects Assessments or evaluation by the Carcinogenic Assessment Group and are used to develop excess cancer risks. A range of 10^-4 to 10^-7 is considered accepptable.	Attained
SURFACE WATER		
WS 430, Water Quality Standards	New Hampshire Surface Water Quality Standards are given for toxics, dissolved oxygen, temperature increase, pH, and total coliform. Federal AWQC were adopted by NH in Ws 430.	Attained (a)
Federal Ambient Water Quality Criteria (AWQC)	Federal AWQC are health-based criteria which have been developed for 95 carcinogenic and noncarcinogenic compounds.	Attained (a)

Table 10
ARARs FOR ALTERNATIVE SC-5
COAKLEY LANDFILL
NORTH HAMPTON, NEW HAMPSHIRE

ARAR's	Requirement Synopsis	Status/Action to be Taken to Attain ARAR's
AIR		
CAA - National Ambient Air Quality Standards (NAAQS) - 40 CFR 52	Refer to State Implementation Plan and NHDES Air Pollution Regulations.	Attained
NH DES - Air Pollution Regulations (Air)	a	Attained (a)
Threshold Limit Values (TLVs)	These standards were issued as consensus standards for controlling air quality in work place environments.	Attained
WETLANDS		
Clean Water Act (CWA) - Section 404	Under this requirement, no activity that adversely affects a wetland shall be permitted if a practicable alternative that has less affect is available.	Excavation of contaminated sediments west of the landfill will be accomplished with minimal effects on the wetland.
Fish and Wildlife Coordination Act (16 U.S.C. 661)	This regulation requires that any Federal Agency that proposes to modify a body of water must consult with the U.S. Fish and Wildlife Services. This requirement is addressed under CWA Section 404 requirements.	Prior to excavation of contaminated sediments and construction of the discharge sewer, EPA will consult the U.S. Fish and Wildlife Service.
Wetlands Executive Order (EO 11990)	Under this regulation, Federal agencies are required to minimize the destruction, loss or degradation of wetlands and preserve and enhance natural and beneficial values of wetlands.	Excavation of contaminated sediments west of the landfill will be accomplished with minimal effects on the wetland.
Floodplains Executive Order (EO 11888)	Federal Agencies are required to reduce the risk of flood loss, to minimize impact of floods, and to restore and preserve the natural and beneficial value of floodplains.	Excavation of contaminated sediments west of the landfill and construction of the discharge sewer will accomplished such that no flood hazard is created and the area is restored to its previous

Table 10
ARARs FOR ALTERNATIVE SC-5
COAKLEY LANDFILL
NORTH HAMPTON, NEW HAMPSHIRE

ARAR's	Requirement Synopsis	Status/Action to be Taken to Attain ARAR's
		condition.
RCRA - Standards for Owners and Operators of Permitted Hazardous Waste Facilities (40 CFR 264)	General facility requirements outline general waste analysis, security measures, inspections, and training requirements.	The cap, gas incineration system and groundwater treatment system will be designed constructed, and operated in accordance with these requirements. All workers will be properly trained.
RCRA - Groundwater Protection (40 CFR 264.30 - 264.31)	This regulation details requirements for a groundwater monitoring program to be installed at the site.	A groundwater monitoring program consistent with this regulation will be developed and implemented.
RCRA - Closure and Post-closure (40 CFR 264.110 - 264.120)	This regulation details specific requirements for closure and post-closure of hazardous waste facilities.	A monitoring and maintenance program for the capping system will be implemented in accordance with this regulation.
OSHA - General Industry Standards (29 CFR Part 1910)	This regulation specifies the 8-hour time-weighted average concentration for various organic compounds.	Proper respiratory equipment will be worn if it is impossible to maintain the work atmosphere below the TWA's
OSHA - Safety and Health Standards (29 CFR Part 1926)	This regulation specifies the type of safety equipment and procedures to be followed during site remediation.	All appropriate safety equipment will be on-site. In addition, safety procedures will be followed during on-site activities.
OSHA - Recordkeeping, Reporting, and Related Regulations	This regulation outlines the record- keeping and reporting requirements for an employer under OSHA.	These requirements apply to all site contractors and subcontractors and must be followed during all site work.
RCRA - Land Disposal Restrictions (40 CFR 268)	This regulation outlines land disposal requirements and restrictions for hazardous wastes.	Sludge from the groundwater treatment unit and material from the Oily Debris Area which fails the TCLP extraction procedure will be treated to the Best Demonstrated Available Technology levels at an off-site facility.
CWA - 40 CFR Part 403	This regulation specifies pretreatment standards for discharges to a publicly-owned treatment works (POTW).	General prohibition standard will be met.
TSCA - PCB Requirements (40 CFR 761)	This regulation outlines the requirements for the disposal of materials containing PCB's.	The material excavated from the Oily Debris Area will be analyzed for PCB's prior to shipment off-site.
US EPA Off-site Policy	This regulation requires that off-site treatment	Off-site disposal of sludge from the groundwater

Table 10
ARARs FOR ALTERNATIVE SC-5
COAKLEY LANDFILL
NORTH HAMPTON, NEW HAMPSHIRE

ARAR's	Requirement Synopsis	Status/Action to be Taken to Attain ARAR's
	and/or disposal be performed at a facility which is in compliance with EPA regulations.	treatment unit, waste from the Oily Debris Area and pretreated groundwater will be performed in accordance with this policy.
DOT Rules for Transportation of Hazardous Materials (49 CFR Parts 107, 171.10171.5)	This regulation outlines procedures for the packaging, labeling, manifesting, and transporting of hazardous materials.	Sludge from the groundwater treatment unit and waste from the Oily Debris Area will be packaged, manifested, and transported to a licensed off-site TSD facility in compliance with these regulations.
NHDES Pretretment Regulations (Ws 904)	This regulation specifies preteatment requirements for discharges to a POTW.	A permit would be obtained from the Town prior to discharging the pretreated groundwater. Pretreatment limitations will be used as design basis for groundwater treatment. (a)
N.H. DES New Hampshire Solid Waste Regulations He-P 1901.	This regulation provides standards for solid waste disposal facilities.	Standards for solid waste disposal facilities will be followed when the landfill is capped. (a)
N.H. DES - Air Pollution Regulations (Air)	This regulation outlines the standards and requirements for air pollution control in the State of New Hampshire; all provisions, procedures, and definitions are described.	Emissions from excavation, air stripper and gas incineration system will be maintained below standards using emissions controls, as necessary. (a)
New Hampshire Wetlands Board, RSA 483-A, and RSA 149-8a.	These regulations are promulgated under the N.H. Wetlands Board which regulates dredging, filling, altering or polluting inland wetlands.	Excavation of contaminated sediments west of the landfill will be accomplished with minimal effects on the wetland. (a)
New Hampshire Hazardous Waste Rules, He-P 1905.	These regulations outline the criteria for the construction, operations, and maintenance of a new facility or increase in an existing facility for the storage, treatment, or disposal of hazardous waste.	The disposal of material on-site and the constuction and operation of the treatment facility will be performed in accordance with these regulations. (a)

a: State of New Hampshire ARARs are included in Appendix H.

Table 11
ARARs FOR ALTERNATIVE SC-6
COAKLEY LANDFILL
NORTH HAMPTON, NEW HAMPSHIRE

ARAR's	Requirement Synopsis	Status/Action to be Taken to Attain ARAR's
GROUNDWATER		
SDWA - Maximum Contaminant Levels (MCLs) (40 CFR 141.11 - 141.16)	MCLs have been promulgated for a number of common organic and inorganic contaminants. These levels regulate the contaminants in public drinking water supplies, but may also be considered relevant and appropriate for groundwater aquifers potentially used for drinking water.	Attained
WS 410	New Hampshire Groundwater Quality Criteria have been promulgated for a number of contaminants.	Attained (a)
WS 300	New Hampshire drinking water standards regulate the concentration of contaminants in public drinking water supplies.	Attained (a)
EPA Risk Reference Doses (RfDs)	RfDs are dose levels developed based on the noncarcinogenic effects and are used to develop Hazard Indices. A Hazard Index of less than or equal to 1 is considered acceptable.	Attained
Federal Ambient Water Quality Criteria (AWQC) - Adjusted for Drinking Water	Federal AWQC are health-based criteria which have been developed for 95 carcinogenic and non-carcinogenic compounds.	Attained
EPA Carcinogen Assessment Group Potency Factors	Potency Factors are developed by the EPA from Health Effects Assessments or evaluation by the Carcinogenic Assessment Group and are used to develop excess cancer risks. A range of 10^-4 to 10^-7 is considered accepptable.	Attained
SURFACE WATER		
WS 430, Water Quality Standards	New Hampshire Surface Water Quality Standards are given for toxics, dissolved oxygen, temperature increase, pH, and total coliform. Federal AWQC were adopted by NH in Ws 430.	Attained (a)
Federal Ambient Water Quality Criteria (AWQC)	Federal AWQC are health-based criteria which have been developed for 95 carcinogenic and noncarcinogenic compounds.	Attained (a)

Table 11
ARARs FOR ALTERNATIVE SC-6
COAKLEY LANDFILL
NORTH HAMPTON, NEW HAMPSHIRE

ARAR's	Requirement Synopsis	Status/Action to be Taken to Attain ARAR's
AIR		
CAA - National Ambient Air Quality Standards (NAAQS) - 40 CFR 52	Refer to State Implementation Plan and NHDES Air Pollution Regulations.	Attained
NH DES - Air Pollution Regulations (Air)	a	Attained (a)
Threshold Limit Values (TLVs)	These standards were issued as consensus standards for controlling air quality in work place environments.	Attained
WETLANDS		
Clean Water Act (CWA) - Section 404	Under this requirement, no activity that adversely affects a wetland shall be permitted if a practicable alternative that has less affect is available.	Excavation of contaminated sediments west of the landfill will be accomplished with minimal effects on the wetland.
Fish and Wildlife Coordination Act (16 U.S.C. 661)	This regulation requires that any Federal Agency that proposes to modify a body of water must consult with the U.S. Fish and Wildlife Services. This requirement is addressed under CWA Section 404 requirements.	Prior to excavation of contaminated sediments and discharge of treated groundwater to the onsite surface water, EPA will consult the U.S. Fish and
Wetlands Executive Order (EO 11990)	Under this regulation, Federal agencies are required to minimize the destruction, loss or degradation of wetlands and preserve and enhance natural and beneficial values of wetlands.	Excavation of contaminated sediments west of the landfill will be accomplished with minimal effects on the wetland.
Floodplains Executive Order (EO 11888)	Federal Agencies are required to reduce the risk of flood loss, to minimize impact of floods, and to restore and preserve the natural and beneficial value of floodplains.	Excavation of contaminated sediments west of the landfill and discharge of treated groundwater will accomplished such that no flood hazard is created and the area is restored to its previous

Table 11
ARARs FOR ALTERNATIVE SC-6
COAKLEY LANDFILL
NORTH HAMPTON, NEW HAMPSHIRE

ARAR's	Requirement Synopsis	Status/Action to be Taken to Attain ARAR's
		condition.
RCRA - Standards for Owners and Operators of Permitted Hazardous Waste Facilities (40 CFR 264)	General facility requirements outline general waste analysis, security measures, inspections, and training requirements.	The cap, gas incineration, groundwater treatment, soil incineration and solidification units will be designed, constructed, and operated in accordance with these requirements. All workers will be properly trained.
RCRA - Groundwater Protection (40 CFR 264.30 - 264.31)	This regulation details requirements for a groundwater monitoring program to be installed at the site.	A groundwater monitoring program consistent with this regulation will be developed and implemented.
RCRA - Closure and Post-closure (40 CFR 264.110 - 264.120)	This regulation details specific requirements for closure and post-closure of hazardous waste facilities.	A monitoring and maintenance program for the capping system will be implemented in accordance with this regulation.
OSHA - General Industry Standards (29 CFR Part 1910)	This regulation specifies the 8-hour time-weighted average concentration for various organic compounds.	Proper respiratory equipment will be worn if it is impossible to maintain the work atmosphere below the TWA's
OSHA - Safety and Health Standards (29 CFR Part 1926)	This regulation specifies the type of safety equipment and procedures to be followed during site remediation.	All appropriate safety equipment will be on-site. In addition, safety procedures will be followed during on-site activities.
OSHA - Recordkeeping, Reporting, and Related Regulations	This regulation outlines the record- keeping and reporting requirements for an employer under OSHA.	These requirements apply to all site contractors and subcontractors and must be followed during all site work.
RCRA - Land Disposal Restrictions (40 CFR 268)	This regulation outlines land disposal requirements and restrictions for hazardous wastes.	Soil and solid waste from the landfill or sludge from the groundwater treatment unit which fails the TCLP extraction procedure will be treated to the Best Demonstrated Available Technology levels at an off-site facility.
TSCA - PCB Requirements (40 CFR 761)	This regulation outlines the requirements for the disposal of materials containing PCB's.	The material excavated from the landfill will be analyzed for PCB's prior to redisposal in the landfill.
US EPA Off-site Policy	This regulation requires that off-site treatment and/or disposal be performed at a facility which is in compliance with EPA regulations.	Off-site disposal of sludge from the groundwater treatment unit will be performed in accordance with this policy.
DOT Rules for Transportation	This regulation outlines procedures for the	Sludge from the groundwater treatment unit will

Table 11
ARARs FOR ALTERNATIVE SC-6
COAKLEY LANDFILL
NORTH HAMPTON, NEW HAMPSHIRE

ARAR's	Requirement Synopsis	Status/Action to be Taken to Attain ARAR's
of Hazardous Materials (49 CFR Parts 107, 171.10171.5)	packaging, labeling, manifesting, and transporting of hazardous materials.	be packaged, manifested, and transported to a licensed off-site TSD facility in compliance with these regulations.
N.H. DES New Hampshire Solid Waste Regulations He-P 1901.	This regulation provides standards for solid waste disposal facilities.	Standards for solid waste disposal facilities will be followed when the landfill is capped. (a)
N.H. DES - Air Pollution Regulations (Air)	This regulation outlines the standards and requirements for air pollution control in the State of New Hampshire; all provisions, procedures, and definitions are described.	Emissions from excavation, air stripper, soil/solid waste incinerator and gas incineration system will be maintained below standards using emissions controls, as necessary. (a)
New Hampshire Wetlands Board, RSA 483-A, and RSA 149-8a.	These regulations are promulgated under the N.H. Wetlands Board which regulates dredging, filling, altering or polluting inland wetlands.	Excavation of contaminated sediments west of the landfill will be accomplished with minimal effects on the wetland. (a)
New Hampshire Hazardous Waste Rules, He-P 1905.	These regulations outline the criteria for the construction, operations, and maintenance of a new facility or increase in an existing facility for the storage, treatment, or disposal of hazardous waste.	The disposal of material on-site and the constuction and operation of the treatment facility will be performed in accordance with these regulations. (a)

a: State of New Hampshire ARARs are included in Appendix H.

Table 14

Chemical-Specific ARAR's and Criteria, Advisories, and Guidance
Coakley Landfill Site, North Hampton, New Hampshire

Medium/Authority	Requirement	Status	Requirement Synopsis	Consideration in the RI/FS
GROUNDWATER				
Federal Regulatory Requirements	SDWA - Maximum Contaminant Levels (MCL's) (40 CFR 141.11 - 141.16)	Relevant and appropriate	MCL's have been promulgated for a number of common organic and inorganic contaminants. These levels regulate the contaminants in public drinking water supplies but may also be considered relevant and appropriate for groundwater aquifers potentially used for drinking water.	When the risks to human health due to consumption of groundwater were assessed, concentrations of contaminants of concern were compared to their MCL's. MCL's were used to set cleanup levels for these contaminants (see Table 2-4).
State Regulatory Requirements	RSA 149:8, III/ Ws 410	Applicable[a]	New Hampshire Groundwater Quality Standards have been promulgated for a number of contaminants.	When the state standards were more stringent than Federal levels, the state standards were used.
Federal Criteria, Advisories, and Guidance	U.S. EPA Risk Reference Doses (RfD's)	To be considered	RfD's are dose levels developed based on the noncarcinogenic effects.	U.S. EPA RfD's were used to characterize risks due to exposure to contaminants in groundwater.
	Federal Ambient Water Quality Criteria (AWQC) - Adjusted for Drinking Water	Relevant and appropriate	Federal AWQC are health-based criteria that have been developed for 95 carcinogenic and noncarcinogenic compounds.	AWQC were used to characterize health risks due to contaminant concentrations in drinking water.
	U.S. EPA Carcinogen Assessment Group Potency Factors	To be considered	Potency factors are developed by the EPA from Health Effects Assessments or evaluation by the Carcinogenic Assessment Group.	U.S. EPA Carcinogenic Potency Factors were used to compute the individual incremental cancer risk resulting from exposure to site contaminants.
	SDWA - Maximum Contaminant Level Goals (MCLG's)	To be considered	Similar to MCL's; unenforceable goals based on the health risk.	MCLG's may be used as cleanup goals if deemed more appropriate than MCL's by U.S. EPA.

Table 14
(continued)

Medium/Authority	Requirement	Status	Requirement Synopsis	Consideration in the RI/FS
SURFACE WATER				
State Regulatory Requirements	Ws 430/RSA: 149:8. I; Water Quality Classifications	Applicable	New Hampshire Surface Water Quality Standards are given for toxics, dissolved oxygen, temperature increase, pH, and total coliform. Federal AWQC were adopted by NH in WS 430.	NH requirements for dissolved oxygen, temperature increase, pH, and total coliform will be attained if state standards are more stringent (see Table 2-5).
	Ws 400, Surface Water Quality Standards	Applicable	Protects surface water from degradation and protects aquatic life.	Remedial action to eliminate discharge that may cause degradation or endangerment of aquatic life.
Federal Criteria, Advisories, and Guidance	Federal Ambient Water Quality Criteria (AWQC)	Relevant and appropriate	Federal AWQC are health-based criteria that have been developed for 95 carcinogenic and noncarcinogenic compounds.	AWQC were considered in characterizing human health risks and toxic effects on aquatic organisms due to concentrations in surface water. Because this water is not used as a drinking water source, the criteria for aquatic organism protection and ingestion of contaminate aquatic organisms were considered (see Table 2-4).
CONTAMINATED SOILS AND SOLID WASTE				
Federal Criteria, Advisories, and Guidance	U.S. EPA Risk Reference Doses (RfDs)	To be considered	RfD's are dose levels developed based on the noncarcinogenic effects.	U.S. EPA RfD's were used to characterize risks due to exposure to contaminants in groundwater.
	U.S. EPA Carcinogenic Assessment Group Potency Factors	To be considered	Potency factors are developed by the U.S. EPA from Health Effects Assessments or evaluation by the Carcinogenic Assessment Group.	U.S. EPA Carcinogenic Potency Factors were used to compute the individual incremental cancer risk resulting from exposure to site contaminants.
	U.S. EPA Off-site Policy	To be considered	Specifies appropriate method of off-site treatment on disposal of waste from a Superfund site.	Off-site disposal costs were calculated based on compliance with the present off-site policy.

Table 14
(continued)

Medium/Authority	Requirement	Status	Requirement Synopsis	Consideration in the RI/FS
AIR				
Federal Regulatory Requirements	CAA - National Ambient Air Quality Standards (NAAQS) - 40 CFR 52	Relevant and appropriate	These standards were primarily developed to regulate stack and automobile emissions.	Standards for particulate matter will be used when assessing excavation and emission controls for soil treatments.
State Regulatory Requirements	RSA 125-C/AIR 100, NH DES - Air Pollution Regulations (Air)	Applicable	Establishes standards for release of VOC's and hazardous pollutants.	Applicable for alternatives involving excavation and emission controls for incineration, soil treatment, and groundwater treatment.
Federal Criteria, Advisories, and Guidance	Threshold Limit Values (TLVs)	To be considered	These standards were issued as consensus standards for controlling air quality in work place environments.	TLV's could be used for assessing site inhalation risks for soil removal operations.

[a]A more detailed description of this regulation and its requirements can be found in Appendix H.

Table 15

Location-Specific ARAR's and Criteria, Advisories, and Guidance
Coakley Landfill Site, North Hampton, New Hampshire

Medium/Authority	Requirement	Status	Requirement Synopsis	Consideration in the RI/FS
WETLAND/FLOOD PLAINS				
Federal Regulatory Requirements	Clean Water Act (CWA) - Section 404	Applicable	Under this requirement, no activity that adversely affects a wetland shall be permitted if a practicable alternative that has less effect is available.	During the identification, screening, and evaluation of alternatives, the effects on wetlands are evaluated.
	Fish and Wildlife Coordination Act (16 U.S.C. 661)	Applicable	This regulation requires that any Federal agency that proposes to modify a body of water must consult with the U.S. Fish and Wildlife Service. This requirement is addressed under CWA Section 404 requirements.	During the identification, screening, and evaluation of alternatives, the effects on wetlands are evaluated. If an alternative modifies a body of water, U.S. EPA must consult the U.S. Fish and Wildlife Service.
	RCRA Location Standards (40 CFR 264.18)	Applicable	This regulation outlines the requirements for constructing a RCRA facility on a 100-year flood plain.	A facility located on a 100-year flood plain must be designed, constructed, operated, and maintained to prevent washout or any hazardous waste by a 100-year flood, unless waste may be removed safely before flood water can reach the facility or no adverse effects on human health and the environment would result if washout occurred. Applicable alternatives involve removing, filling, dredging, or altering a NH-defined wetland.
	Wetlands Executive Order (EO 11990)	Applicable	Under this regulation, Federal agencies are required to minimize the destruction, loss, or degradation of wetlands and preserve and enhance natural and beneficial values of wetlands.	Remedial alternatives that involve construction must include all practicable means of minimizing harm to wetlands. Wetlands protection considerations must be incorporated into the planning and decision making about remedial alternatives.
	Flood Plains Executive Order (EO 11988)	Applicable	Federal agencies are required to reduce the risk of flood loss, to minimize impact of floods, and to restore and preserve the natural and beneficial value of flood plains.	The potential effects of any action must be evaluated to ensure that the planning and decision making reflect consideration of flood hazards and flood plain management, including restoration and preservation of natural underdeveloped flood plains.

Table 15
(continued)

Medium/Authority	Requirement	Status	Requirement Synopsis	Consideration in the RI/FS
	40 CFR 6.	Applicable	Promulgated the foregoing wetlands and flood plains executive orders.	Considered with the foregoing executive orders.
State Regulatory Requirements	New Hampshire Wetlands Board RSA 483-A and RSA 149-8A.	Applicable	These regulations are promulgated under the New Hampshire Wetlands Board, which regulate dredging, filling, altering, or polluting inland wetlands.	May be relevant and appropriate if alternatives involve removing, filling, dredging, or altering a NH-defined wetland.
	N.H. DES - Hazardous Waste Regulations, He-P 1905	Applicable	These regulations outline the criteria for the construction, operation, and maintenance of facilities for the storage, treatment, or disposal of hazardous waste.	Applicable for final disposal of hazardous wastes generated on-site.
	New Hampshire Solid Waste Management Rules, He-P Ch. 1901.	Applicable	This regulation outlines procedures for establishing a solid waste facility in the State of New Hampshire.	Nonhazardous waste may remain on-site after treatment, requiring solid waste facility management and closure.

Table 16

Potential Action-Specific ARAR's
Coakley Landfill Site, North Hampton, New Hampshire

ARAR's	Requirement Synopsis	Action to Be Taken to Attain ARAR's
RCRA - Standards for Owners and Operators of Permitted Hazardous Waste Facilities (40 CFR 264)	General facility requirements outline general waste analysis, security measures, inspections, and training requirements.	Any facilities will be constructed, fenced, posted, and operated in accordance with this requirement. All workers will be properly trained. These standards would apply to any treatment or disposal facility operated on-site.
RCRA - Groundwater Protection (40 CFR 264.30 - 264.31)	This regulation details requirements for a groundwater monitoring program to be installed at the site.	A groundwater monitoring program is a component of all alternatives. RCRA regulations will be considered during development of this program.
RCRA - Closure and Post-Closure (40 CFR 264.110 - 264.120)	This regulation details specific requirements for closure and post-closure of hazardous waste facilities.	Those parts of the regulation concerned with long-term monitoring and maintenance of the site will be considered during remedial design.
OSHA - General Industry Standards (29 CFR Part 1910)	This regulation specifies the 8-hour, time-weighted average concentration for various organic compounds.	Proper respiratory equipment will be worn if it is impossible to maintain the work atmosphere below the concentrations.
OSHA - Safety and Health Standards (29 CFR Part 1926)	This regulation specifies the type of safety equipment and procedures to be followed during site remediation.	All appropriate safety equipment will be on-site. In addition, safety procedures will be followed during on-site activities.
OSHA - Recordkeeping, Reporting, and Related Regulations	This regulation outlines the recordkeeping and reporting requirements for an employer under OSHA.	These requirements apply to all site contractors and subcontractors and must be followed during all site work.
RCRA - Land Disposal Restrictions (40 CFR 268)	This regulation outlines land disposal requirements and restrictions for hazardous wastes.	Soils that fail the TCLP extraction procedure will be treated to the Best Demonstrated Available Technology levels before being placed into a landfill or replaced onto the land.
CWA - 40 CFR Part 403	This regulation specifies pretreatment standards for discharges to a publicly owned treatment works (POTW).	If a leachate collection system is installed and the discharge is sent to a POTW, a permit would be obtained from the POTW prior to discharge.
CWA - Section 404	This regulation outlines requirements for discharges of dredged or fill material. Under this requirement, no activity that affects a wetland shall be permitted if a practicable alternative that has less impact on the wetland is available. If there is no other practicable alternative, impacts must be mitigated.	During the final selection of remedial alternatives, the effects on wetlands must be evaluated.

Table 16
(continued)

ARAR's	Requirement Synopsis	Action to Be Taken to Attain ARAR's
TSCA - PCB requirements (40 CFR 761)	This regulation outlines the requirements for disposal of materials containing PCB's.	Any alternative that includes treatment or disposal will have representative samples analyzed for PCB's. PCB treatment would be performed off-site.
CAA-NAAQS (40 CFR 52)	This regulation specifies maximum primary and secondary 24-hour concentrations for particulate matter.	Fugitive dust emissions from site excavation activities will be maintained below standards using dust suppressants, if necessary.
Fish and Wildlife Coordination Act 16 USC661 et seq.	This act requires that before undertaking any Federal action that causes impoundment, diversion, or other modification of any body of water the following agencies must be consulted: the appropriate state agency exercising jurisdiction over wildlife resources and the U.S. Fish and Wildlife Service.	Before discharging treated groundwater to surface water, the appropriate agencies will be consulted.
Protection of Archeological Resources (32 CFR Part 229,229.4; 43 CFR Parts 107, 171.1-171.5)	This regulation develops procedures for the protection of archeological resources.	If archaeological resources are encountered during soil excavation, work will stop until the area has been reviewed by Federal and state archaeologists.
DOT Rules for Transportation of Hazardous Materials (49 CFR Parts 107, 171.1-171.5)	This regulation outlines procedures for the packaging, labeling, manifesting, and transporting of hazardous materials.	Contaminated materials will be packaged, manifested, and transported to a licensed off-site disposal facility in compliance with these regulations.
N.H. DES New Hampshire Solid Regulations He-P 1901.	This regulation provides standards for solid waste disposal facilities.	Standards for solid waste disposal facilities will be followed.
N.H. DES - Air Pollution Regulations AIR 604-604, 1002	This regulation outlines the standards and requirements for air pollution control in the State of New Hampshire; all provisions, procedures, and definitions are described.	Particulate matter emissions from site activities must be maintained within acceptable limits.
New Hampshire Wetlands Board, RSA 483-A, and RSA 149-8a.	These regulations are promulgated under the NH Wetlands Board, which regulates dredging, filling, altering, or polluting inland wetlands.	If applicable alternatives involve removing, filling, dredging, or altering a New Hampshire-defined wetland.
New Hampshire Hazardous Waste RSA MIA/He-P 1905.	These regulations outline the criteria for the construction, operation, and maintenance of a new facility or increase in an existing facility for the storage, treatment, or disposal of hazardous waste.[a]	These regulations supplement RCRA hazardous waste regulations and, therefore, must also be considered at the Coakley Landfill Site.

[a]A more detailed description of this regulation and its requirements can be found in Appendix H.

Table 16
(continued)

ARAR's	Requirement Synopsis	Action to Be Taken to Attain ARAR's
Groundwater Protection Limits		
RSA 149:8, III; N.H. Admin Code Ws Ch. 410	These provisions establish criteria for groundwater protection.	Remedial alternatives involving discharges to groundwater must comply with these standards.
Surface Water Protection Standards		
RSA Ch. 149, N.H. Admin Code Ws Ch. 430	These provisions establish criteria for surface water protection.	Remedial alternatives involving the discharge to surface water of contaminants, treated effluents or treated groundwater must comply with these standards.
RSA 149:4-a; N.H. Admin Code Ws Ch. 900, part 904, Pre-treatment Standards for Publicly Owned Treatment Works (POTW)	These provisions establish standards for discharges to publicly owned sewage treatment facilities.	Remedial alternatives involving discharges of treated groundwater or other effluent to any POTW must comply with these standards.
N.H. Safe Drinking Water Act		
RSA Ch. 148-B; N.H. Admin Code Ws Part 300	These provisions establish state drinking water standards and govern the location and operation of public water systems.	Remedial alternatives involving the establishment of alternative public drinking water supplies must comply with these standards.

TABLE 17

I. CONTAMINANT AND LOCATION-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE STATE REQUIREMENTS, COAKLEY LANDFILL SITE, NORTH HAMPTON, NEW HAMPSHIRE[1]

	Applicable[2]	Relevant & Appropriate[2]
A. GROUNDWATER:		
1. RSA 149:8,III; N.H. Admin. Ws Ch. 410 - Protection of Groundwater.	X	
a. Ws 410.05(a) Discharges to Groundwater.	X	
b. Ws 410.09 Groundwater Discharge Criteria, incorporating by reference Ws Part 302 (Maximum Contaminant Levels [MCL's] and Suggested No Adverse Response Levels [SNARLS])	X	

1 See Appendix A for synopsis of each requirement and discussion of action necessary to attain ARAR's.

2 The absence of any symbol in the columns designated "Applicable" or "Relevant and Appropriate" indicates that, in the circumstances present at this site, the requirement is not applicable or relevant and appropriate.

I. CONTAMINANT AND LOCATION-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE STATE REQUIREMENTS, COAKLEY LANDFILL SITE, NORTH HAMPTON, NEW HAMPSHIRE[1]

	Applicable	Relevant & Appropriate
c. Ws 410.10, Additional Groundwater Criteria.	X	
d. Ws 410.05(e) Groundwater Quality Criteria; Health-based groundwater protection standards.	X	
e. Ws 410.05(g) Groundwater Quality Criteria; Nondegradation of Surface Water.	X	

TABLE 17

I. CONTAMINANT AND LOCATION-SPECIFIC
APPLICABLE OR RELEVANT AND APPROPRIATE
STATE REQUIREMENTS, COAKLEY LANDFILL SITE, NORTH HAMPTON, NEW HAMPSHIRE[1]

	Applicable	Relevant & Appropriate
B. SURFACE WATER		
1. RSA 149:8,I - Enforcement of Surface Water Classifications.	X	
2. Ws Ch. 400, Part 437 - Water Quality Standards - Fish Life	X	
3. Ws Ch. 400, Part 439 - Antidegradation Policy.	X	
C. WETLANDS IMPACT		
1. RSA 149:8-a, Dredging and Control of Run-Off; Ws Ch. 400 Part 415, Dredging Rules.	X	

TABLE 17

I. CONTAMINANT AND LOCATION-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE STATE REQUIREMENTS, COAKLEY LANDFILL SITE, NORTH HAMPTON, NEW HAMPSHIRE[1]

	Applicable	Relevant & Appropriate
2. Fill and Dredge in Wetlands, RSA Ch. 483-A and Wt. Ch. 300, Criteria and Conditions.	X	
D. AIR EMISSIONS		
1. RSA Ch. 125-C, Air Pollution Control; N.H. Admin. Code Air Ch. 100 Parts 604 through 606; Part 1002.	X	
E. HISTORIC PRESERVATION		
1. New Hampshire Historic Preservation Act, RSA 227-C.		
2. Local Historic Districts, RSA 31:89-a-31:89-k.		

TABLE 17

I. CONTAMINANT AND LOCATION-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE STATE REQUIREMENTS, COAKLEY LANDFILL SITE, NORTH HAMPTON, NEW HAMPSHIRE[1]

	Applicable	Relevant & Appropriate
E. HAZARDOUS WASTE REQUIREMENTS		
N.H. Hazardous Waste Management Act, RSA Ch. 147-A; Hazardous Waste Management Rules, N.H. Admin. Rules He-P Ch. 1905.	X	
G. SOLID WASTE REQUIREMENTS		
N.H. Solid Waste Management Act, RSA Ch. 149-M; Solid Waste Management Rules, N.H. Admin. Rules He-P Ch. 1901.	X	

TABLE 10

II. ACTION-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE STATE REQUIREMENTS, COAKLEY LANDFILL SITE, NORTH HAMPTON, NEW HAMPSHIRE[1]

Requirement	No Action SC-1	Capping SC-3	Capping/On-Site Treatment & Disposal SC-4	Capping/On-Site Treatment Off-Site TSD SC-5	On-Site/Treatment & Disposal (SW & Grwater)/Capping SC-6	No Action MM-1	Groundwater Treatment/ Disposal MM-2	Altern Water Supply MM-3
A. HAZARDOUS WASTE REQUIREMENTS								
1. RSA Ch. 147-A, New Hampshire Hazardous Waste Management Act; N.H. Admin. Code He-P Ch. 1905.	X	X	X	X	X	X	X	X
a. Hazardous Waste Facility Security requirements, He-P 1905.08(d), incorporating by reference 40 C.F.R. §264.14.	X	X	X	X	X	X	X	X
b. General Inspection Requirements, He-P 1905.08(d)(4)(d)	X	X	X	X	X	X	X	X

KEY: X - Applicable
O - Relevant and Appropriate

The absence of any symbol in the column below a designated alternative indicates that the requirement is not applicable, or relevant and appropriate, with regard to the alternative.

TABLE 18

II. ACTION-SPECIFIC
APPLICABLE OR RELEVANT AND APPROPRIATE
STATE REQUIREMENTS, COAKLEY LANDFILL SITE, NORTH HAMPTON, NEW HAMPSHIRE[1]

Requirement	No Action SC-1	Capping SC-3	Capping/On-Site Treatment & Disposal SC-4	Capping/On-Site Treatment Off-Site TSD SC-5	On-Site/Treatment & Disposal (SW & Grwater)/Capping SC-6	No Action MM-1	Groundwater Treatment/ Disposal MM-2	Alterna Water Supply MM-3
incorporating by reference 40 C.F.R. §264.15.								
c. Personnel Training, He-P 1905.08(a)(4)(e) incorporating by reference 40 C.F.R. §264.16.	X	X	X	X	X	X	X	X
d. Location standards, He-P 1905.08(d)(4)(g) incorporating by reference 40 C.F.R. §264.18 and He-P 1905.08(2)j.	X	X	X	X	X	X	X	X
e. Preparedness and Prevention Requirements, He-P 1905.08 (d)(4)(h) incorporating by reference 40 C.F.R. §264, Subpart C.	X	X	X	X	X	X	X	X

TABLE 18

II. ACTION-SPECIFIC
APPLICABLE OR RELEVANT AND APPROPRIATE
STATE REQUIREMENTS, COAKLEY LANDFILL SITE, NORTH HAMPTON, NEW HAMPSHIRE[1]

Requirement	No Action SC-1	Capping SC-3	Capping/On-Site Treatment & Disposal SC-4	Capping/On-Site Treatment Off-Site TSD SC-5	On-Site/Treatment & Disposal (SW & Grwater)/Capping SC-6	No Action MM-1	Groundwater Treatment/ Disposal MM-2	Alterna Water Supply MM-3
f. Contingency Plan, He-P 1905.08(d)(4)(i)incorporating by reference 40 C.F.R. 264, Subpart D.	X	X	X	X	X	X	X	X
g. Groundwater Protection, He-P 1905.08 (d)(4)(j), incorporating by reference 40 C.F.R. 264, Subpart F.	X	X	X	X	X	X	X	X
h. Closure and Post-Closure, He-P 1905.08(d)(4)(k)incorporating by reference 40 C.F.R. §264, Subpart G.	X	X	X	X	X	X	X	X
i. Transfer of facility, He-P 1905.08(d)(5).	X	X	X	X	X	X	X	X

TABLE 18

II. ACTION-SPECIFIC
APPLICABLE OR RELEVANT AND APPROPRIATE
STATE REQUIREMENTS, COAKLEY LANDFILL SITE, NORTH HAMPTON, NEW HAMPSHIRE[1]

Requirement	No Action SC-1	Capping SC-3	Capping/On-Site Treatment & Disposal SC-4	Capping/On-Site Treatment Off-Site TSD SC-5	On-Site/Treatment & Disposal (SW & Grwater)/Capping SC-6	No Action MM-1	Groundwater Treatment/ Disposal MM-2	Alternat Water Supply MM-3
j. Monitoring, He-P 1905.08(d)(6);	X	X	X	X	X	X	X	X
k. Public Notification Plan, He-P 1905.08(d)(9).	O	O	O	O	O	O	O	O
l. General environmental standards, He-P 1905.08(d)(1).	X	X	X	X	X	X	X	X
m. General design standards, He-P 1905.08(d)(2).	X	X	X	X	X	X	X	X
n. Technical Standards for Landfills, He-P 1905.08(f)(1)(f) incorporating by reference 40 C.F.R. §264, Subpart N, and He-P 1905.08(f)(2)(d)	X	X	X	X	X	X		

TABLE 18

II. ACTION-SPECIFIC
APPLICABLE OR RELEVANT AND APPROPRIATE
STATE REQUIREMENTS, COAKLEY LANDFILL SITE, NORTH HAMPTON, NEW HAMPSHIRE[1]

Requirement	No Action SC-1	Capping SC-3	Capping/On-Site Treatment & Disposal SC-4	Capping/On-Site Treatment Off-Site TSD SC-5	On-Site/Treatment & Disposal (SW & Grwater)/Capping SC-6	No Action MM-1	Groundwater Treatment/ Disposal MM-2	Alternat Water Supply MM-3
o. Additional Technical Standards for Treatment He-P 1905.08(f)(2)(a).		X	X	X	X		X	
p. He-P 1905.08(f)(2)(c) Storage Standaros.		X		X	X			
q. Technical Standards for Waste Piles, He-P 1905.08(f)(1)(d) incorporating by reference 40 C.F.R. 264 Subpart L.					X			
r. Technical Standards for Use and Management of Containers, He-P 1905.08(f)(1)(a) incorporating by reference 40 C.F.R. 264, Subpart I.		X	X	X	X			

TABLE 18

II. ACTION-SPECIFIC
APPLICABLE OR RELEVANT AND APPROPRIATE
STATE REQUIREMENTS, COAKLEY LANDFILL SITE, NORTH HAMPTON, NEW HAMPSHIRE[1]

Requirement	No Action SC-1	Capping SC-3	Capping/On-Site Treatment & Disposal SC-4	Capping/On-Site Treatment Off-Site TSD SC-5	On-Site/Treatment & Disposal (SW & Grwater)/Capping SC-6	No Action MM-1	Groundwater Treatment/ Disposal MM-2	Alterna Water Supply MM-3
s. Technical Standards for Tanks, He-P 1905.08(f)(1)(b) incorporating by reference 40 C.F.R. 264, Subpart J.		X	X	X	X			
t. Standards for Generators, He-P 1905.06.		X	X	X	X		X	
u. Manifesting Requirements He-P 1905.04.		X	X	X	X		X	
v. Packaging and Labelling Requirements, He-P 1905.05, incorporating by reference N.H. Admin. Code Saf-C-600 and 40 C.F.R. §§ 172, 173, 178, and 179.		X	X	X	X		X	

TABLE 18

II. ACTION-SPECIFIC
APPLICABLE OR RELEVANT AND APPROPRIATE
STATE REQUIREMENTS, COAKLEY LANDFILL SITE, NORTH HAMPTON, NEW HAMPSHIRE[1]

Requirement	No Action SC-1	Capping SC-3	Capping/On-Site Treatment & Disposal SC-4	Capping/On-Site Treatment Off-Site TSD SC-5	On-Site/Treatment & Disposal (SW & Grwater)/Capping SC-6	No Action MM-1	Groundwater Treatment/ Disposal MM-2	Alternat Water Supply MM-3
B. SOLID WASTE REQUIREMENTS								
1. RSA Ch. 149-M, New Hampshire Solid Waste Management Act; N.H. Admin. Code He-P Ch. 1901.	X	X	X	X	X	X	X	X
C. ACTION-SPECIFIC AIR EMISSION LIMITS								
1. N.H. Admin. Code Air Parts 604 through 606.	X	X	X	X	X	X	X	X
2. Fugitive Dust Emission Control, N.H. Admin. Code Air Part 1002.		X	X	X	X		X	
D. ACTION-SPECIFIC GROUNDWATER PROTECTION STANDARDS								

TABLE 18

II. ACTION-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE STATE REQUIREMENTS, COAKLEY LANDFILL SITE, NORTH HAMPTON, NEW HAMPSHIRE[1]

Requirement	No Action SC-1	Capping SC-3	Capping/On-Site Treatment & Disposal SC-4	Capping/On-Site Treatment Off-Site TSD SC-5	On-Site/Treatment & Disposal (SW & Grwater)/Capping SC-6	No Action MM-1	Groundwater Treatment/ Disposal MM-2	Alterna Water Supply MM-3
1. RSA 149:8,III; N.H. Admin Code Ws Ch. 410.	X	X	X	X	X	X	X	X
E. ACTION-SPECIFIC								
SURFACE WATER PROTECTION STANDARDS								
1. RSA Ch. 149; N.H. Admin Code WS Ch. 430.	X	X	X	X	X	X	X	X
2. RSA 149:4-a; N.H. Admin. Code Ws Ch. 900, Part 904, Pretreatment		X		X			X	

TABLE 18

II. ACTION-SPECIFIC
APPLICABLE OR RELEVANT AND APPROPRIATE
STATE REQUIREMENTS, COAKLEY LANDFILL SITE, NORTH HAMPTON, NEW HAMPSHIRE[1]

Requirement	No Action SC-1	Capping SC-3	Capping/On-Site Treatment & Disposal SC-4	Capping/On-Site Treatment Off-Site TSD SC-5	On-Site/Treatment & Disposal (SW & Grwater)/Capping SC-6	No Action MM-1	Groundwater Treatment/ Disposal MM-2	Alterna Water Supply MM-3
Standards for publicly owned treatment works (POTW).								
F. STANDARDS FOR PUBLIC WATER SYSTEMS								
1. N.H. Safe Drinking Water Act, RSA 148-B								X

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
J.F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203-2211

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 (Site) in North Hampton and Greenland, New Hampshire.

STATUTORY BASIS FOR ISSUANCE OF ESD

Section 117(c) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) requires that, if any remedial or enforcement action is taken under Sections 104, 106 or 120 of CERCLA after adoption of a final remedial action plan, and such action differs in any significant respects from the final plan (i.e. in scope, performance or cost), the United States Environmental Protection Agency (EPA) shall publish an explanation of the significant differences (ESD) and the reasons such changes were made. Current EPA guidance (OSWER Directive 9355.3-02) further provides that issuance of an ESD is appropriate where the Agency determines the need for changes to the ROD which are significant but which do not fundamentally alter the overall remedy. In the present case, because the required adjustments to the ROD do not fundamentally alter the selected remedy for the Site, this ESD is properly issued.

In accordance with Section 117(d) of CERCLA, this ESD will become part of the Administrative Record which is available for public review at both the EPA Region I Records Center, 90 Canal Street, Boston, Massachusetts and the North Hampton Public Library, 235 Atlantic Avenue, North Hampton, New Hampshire.

OVERVIEW OF ESD

On June 28, 1991, EPA issued a final remedial action plan in the form of a Record of Decision (ROD) for the Site. The ROD called for a Source Control Remedy which involves consolidating sediments and solid waste followed by capping the landfill and extracting and treating on-site groundwater and landfill gases.

After the ROD was issued, EPA conducted a technical review of the ROD remedy and reviewed information concerning landfill cap construction and emissions from air strippers. Based on this information, modifications involving cap construction and emission treatment during air stripping will be instituted during Remedial Design and Remedial Action at the Site. The two modifications of the ROD are summarized below.

In the ROD, the cap is originally described as a multi-layer system consisting of a vegetative layer, a drainage layer and impermeable barrier (low permeability barrier of clay or synthetic liner material). The cap is now changed to be consistent with EPA guidance, in effect at the time of the ROD, regarding current cap technology and will include two impermeable barriers: both a synthetic liner and an underlying clay layer. The basis for the additional layer of low permeability material is that this cap design represents the state of the art for landfill cap designs and will provide greater leakage protection than either the clay layer or synthetic liner alone.

The ROD also states that during groundwater treatment, air emissions from the air stripper which contain volatile organic chemicals (VOCs) will be treated by either a carbon adsorption unit or a thermal destruction unit only if emissions exceed a particular level. The ROD is now modified to require that carbon adsorption or thermal destruction be implemented regardless of emission levels. Treatment of VOC emissions is necessary because the site is located in an ozone non-attainment area, and VOC emissions to the air contributes to increased ozone levels. In addition, this change will provide increased protection of human health and the environment and is consistent with the NCP's preference for reduction in mobility, toxicity and volume through treatment.

This ESD is being issued to explain these clarifications to the remedy set forth in the ROD. These changes do not fundamentally alter the remedy selected in the ROD.

DECLARATION

For the foregoing reasons, by my signature below, EPA is issuing this Explanation of Significant Differences for the Coakley Landfill Superfund Site in North Hampton and Greenland, New Hampshire, and the changes stated therein.

March 22, 1991
Date

Julie Belaga
Julie Belaga
Regional Administrator

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

Section 117(c) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), requires that, if any remedial or enforcement action is taken under Sections 104, 106 or 120 of CERCLA after adoption of a final remedial action plan, and such action differs in any significant respects from the final plan (i.e. in scope, performance or cost), the United States Environmental Protection Agency (EPA) shall publish an explanation of the significant differences (ESD) and the reasons such changes were made.

On June 28, 1990, EPA issued a final remedial action plan in the form of a Record of Decision (ROD) for the Coakley Landfill Superfund Site (Site). After the ROD was issued, EPA conducted a technical review of the remedy and reviewed information concerning landfill cap construction and emissions from air strippers. Based on this information, modifications involving cap construction and emission treatment during air stripping will be instituted during Remedial Design and Remedial Action at the Site. These changes do not fundamentally alter the remedy selected in the ROD.

In accordance with Section 117(d) of CERCLA, this ESD will become part of the Administrative Record which is available for public review at both the EPA Region I Records Center, 90 Canal Street, Boston, Massachusetts and the North Hampton Public Library, 235 Atlantic Avenue, North Hampton, New Hampshire.

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

A. Site History

The Coakley Landfill Site (the Site) is situated on approximately 92 acres located within the Towns of Greenland and North Hampton, Rockingham County, New Hampshire (Appendix A, Figure 1). 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. Vehicles access the Site through an entrance gate located on Breakfast Hill Road, approximately 600 feet west of the intersection of Lafayette and Breakfast Hill Roads. The Greenland-Rye town line forms a major portion of the eastern boundary of the Site. A more detailed Site map is shown on Appendix A, Figure 2. There is a more complete description of the Site in the Remedial Investigation Report in Chapter 2, Pages 2-1 to 2-6.

The landfill is situated within the southernmost portion of the Site, almost completely within the Town of North Hampton. The Coakley Landfill constitutes the major portion of the southern section of the Site. Generally rectangular in shape, with an average width of approximately 900 feet and an average length of approximately 1,300 feet, the landfill extends to the western, southern, and eastern boundaries of the property.

Landfill operations began in 1972, with the southern portion of the Site used for refuse from the municipalities of Portsmouth, North Hampton, Newington, and New Castle, along with Pease Air Force Base. Coincident 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.

From 1972 until July 1982, the Site accepted municipal waste. 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, and in March 1983, the 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 completely closed to all disposal activities.

B. Contamination Problems and Response History

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 overburden and bedrock 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. The WSPCC submitted proposals to the U.S. Environmental Protection Agency (EPA) in May and October of 1983 recommending that the Coakley Site be included on the National Priority List (NPL). In December 1983, the Coakley Landfill was proposed for listing on the NPL, and in 1986 it was listed and ranked as No. 689. In July 1985, after additional investigations conducted by the EPA and the WSPCC, the Coakley Landfill ceased operations.

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.

C. Summary of the Selected Remedy

The selected remedy is the first operable unit of a two operable unit approach to the remediation of the Site. It provides for the remediation of the source at the Coakley Site including the contaminated groundwater beneath and in the vicinity of the landfill (i.e., source control). The second operable unit will address any groundwater contamination which has migrated from the landfill, beyond the property boundary (i.e., management of migration).

The source control remedy involves consolidating sediments and solid waste followed by capping the landfill and extracting and treating on site groundwater and landfill gases. Below is a list of the major components of the remedy:

- Consolidating sediment in the wetlands
- Consolidating solid waste;
- Capping the landfill;
- Fencing the landfill;
- Collecting and treating landfill gases;
- Extracting and treating groundwater;
- Long-term environmental monitoring; and
- Institutional controls where possible.

III. DESCRIPTION OF SIGNIFICANT DIFFERENCES

The following changes do not amount to a fundamental alteration of the remedy. The method for handling the waste remains as it is described in the ROD: capping, groundwater treatment and gas collection and treatment. The changes affect only certain components of the remedy, not the method itself.

A. Summary of Changes to Preliminary Design of the Landfill Cap

In the ROD, the cap for the landfill is described as follows: A "multi-layer cap system will be constructed over the landfill and will include a vegetative layer, a drainage layer and impermeable barrier (low permeability barrier of clay or synthetic liner material)." The ROD also states that the cap design will be consistent with NHDES and RCRA closure requirements. After a technical review of the ROD and

cap component of the remedy, this ESD is issued to correct the description of the cap design stated in the ROD to make it consistent with EPA guidance, in effect when the ROD was issued.

For long-term performance and minimum maintenance, the cap system must be designed to promote drainage, minimize erosion and accommodate settling and subsidence of the wastes. The cap shall consist of, at a minimum, three components as recommended by the EPA Technical Guidance Document: Final Covers on Hazardous Waste Landfills and Surface Impoundments (EPA/530-SW-89-047) issued in 1989, in effect when the ROD was issued. These components are: 1) a minimum two-foot-thick soil layer for vegetation, 2) a minimum one-foot-thick granular drainage layer, with a permeability greater than or equal to 1×10^{-2} cm/sec, and 3) a flexible membrane liner (FML) at least 40 mils thick that overlies a two-foot-thick clay barrier (low-permeability soil layer), which has a permeability of 1×10^{-7} cm/sec or less (composite liner). The FML/low-permeability soil layer must be located below the maximum depth of frost penetration. The two-foot clay layer may be substituted with a geomembrane material of equal or lower permeability.

The cap design specified in the 1989 Technical Guidance Document represents the state of the art for landfill cap designs and will provide greater leakage protection than either the clay layer or synthetic liner alone. The recommended cap is now consistent with that guidance.

The cost associated with the additional layer for the cap is estimated at $ 1 million. This represents a 5% increase to the cost of the overall remedy.

B. Summary of Changes to the VOC Emissions Treatment

The ROD specifies that the air emissions from the air stripper are to be treated by either a carbon adsorption unit or a thermal destruction unit according to an OSWER Directive 9355.0-28, June 15, 1989. In this directive, the decision to treat VOC emissions from an air stripper is based on actual emission rates of VOCs. Should emission levels remain below those set in the OSWER Directive, treatment is not necessary.

VOC emissions contribute to ozone production. Because the Site is located in an ozone non-attainment area the Region has determined it is necessary to control VOC emissions from the air stripping unit regardless of VOC

emission rates, in accordance with Regional policy. Treatment of the air stream by carbon adsorption or incineration will prevent both exposure to the VOC emissions through inhalation and will prevent the production of ozone resulting from emissions of additional VOCs to the air.

In addition, this adjustment will provide an increase in overall protection of human health and the environment, and is consistent with the NCP's preference for reduction in mobility, toxicity and volume through treatment. National Oil and Hazardous Substances Pollution Contingency Plan; Final Rule, 40 CFR Part 300.430 (a)(iii)(A). Transferring VOCs from one environmental medium (groundwater) to another medium (air) during the air stripping portion of the groundwater treatment does not protect the environment as well as removing those VOCs from the environment, and is also not consistent with the treatment preference. Contaminants must be removed from the air stream.

Adding either activated carbon filtration or incineration, regardless of emission levels will cost approximately $1 million. This cost is, however, already included in the groundwater treatment cost estimate.

IV. SUPPORT AGENCY COMMENTS

The State of New Hampshire concurs with these modifications as set forth in the attached concurrence letter dated March 22, 1991.

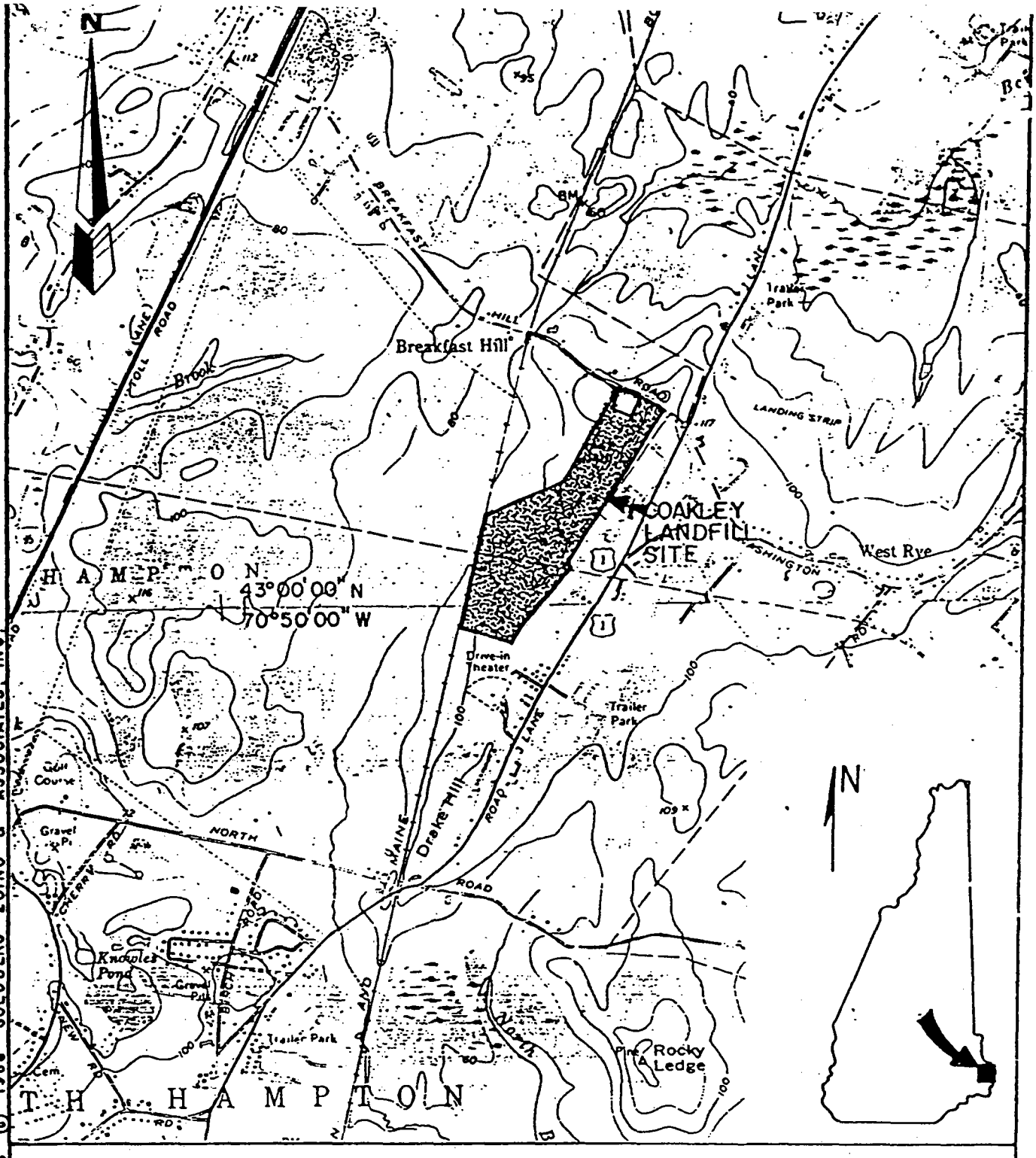
V. STATUTORY DETERMINATION

Considering the above outlined adjustments to the selected remedy set forth in the ROD, EPA believes that the remedy is more 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

Information regarding these changes to the ROD is being disseminated by mailing this document to all parties on the Community Relations Mailing List and to all Potentially Responsible Parties and by publishing notice of this ESD in two local newspapers (Foster's Daily Democrat and the Portsmouth Herald). This document shall also be included in the Administrative Record.

APPENDIX A



0' 1000' 2000' 4000'

FROM USGS: PORTSMOUTH, N.H. (1944)
HAMPTON, N.H. (1944)
QUADRANGLE MAPS

FILE No. D-6683

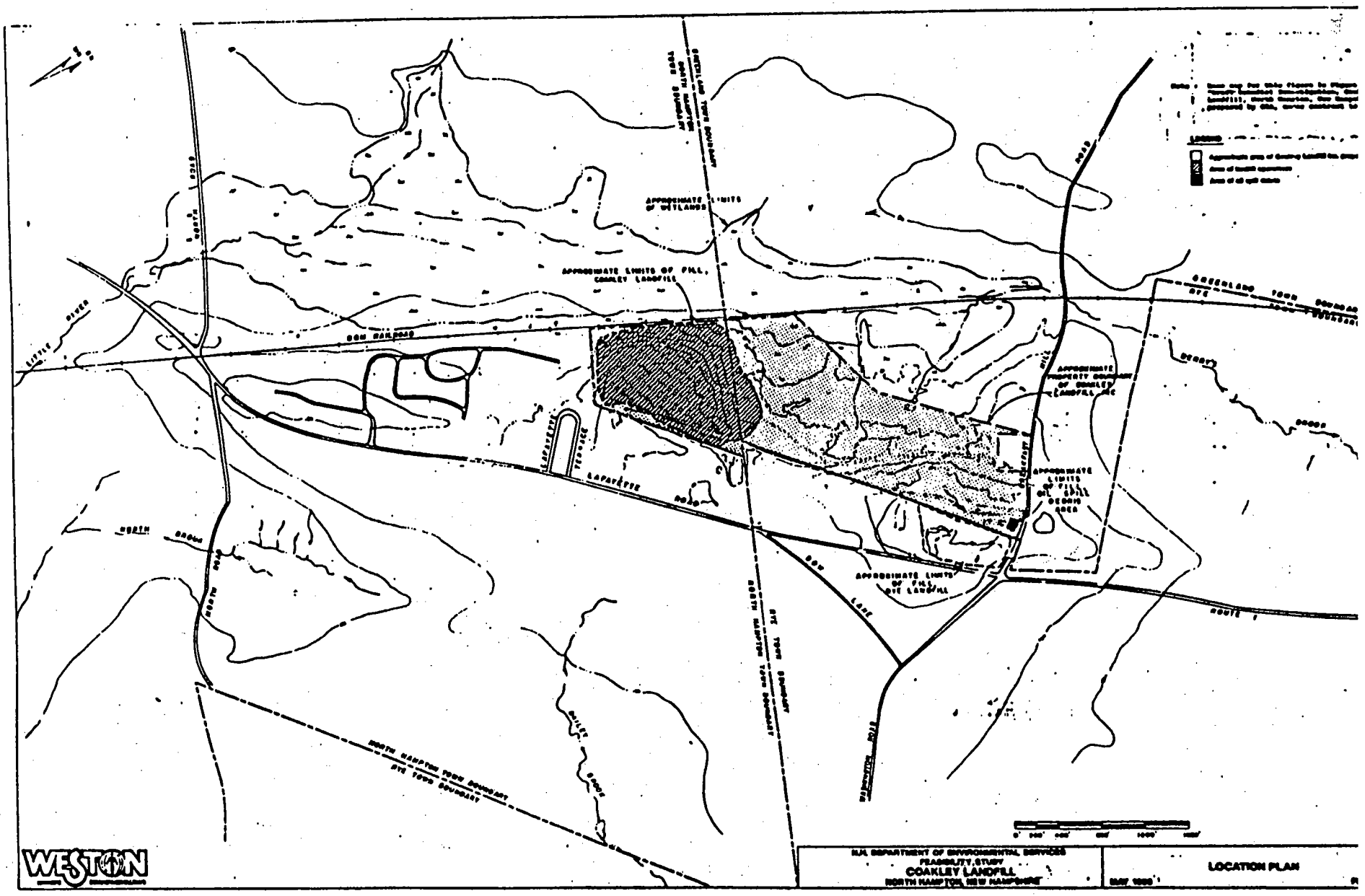
GZA/WESTON

REMEDIAL INVESTIGATION
COAKLEY SANITARY LANDFILL
NORTH HAMPTON, NEW HAMPSHIRE

LOCUS PLAN

OCT. 1988

FIGURE No.1


WESTON
N.H. DEPARTMENT OF ENVIRONMENTAL SERVICES
FEASIBILITY STUDY
COAKLEY LANDFILL
NORTH HAMPTON, NEW HAMPSHIRE
LOCATION PLAN

APPENDIX B

SCOPE OF WORK

COAKLEY LANDFILL SUPERFUND SITE

CONSENT DECREE EPA DOCKET NO. CERCLA NHD064424153

APPENDIX B
TO
CONSENT DECREE
U.S. V. CITY OF PORSTMOUTH, NEW HAMPSHIRE, ET AL.
SCOPE OF WORK

ATTACHMENT 4

CONSTRUCTION QUALITY ASSURANCE/QUALITY CONTROL PLANS . 32 .

APPENDIX B
TO
CONSENT DECREE
U.S. V. CITY OF PORTSMOUTH, NEW HAMPSHIRE, ET AL.
SCOPE OF WORK FOR REMEDIAL DESIGN AND REMEDIAL ACTION
COAKLEY LANDFILL

A. PURPOSE OF THE SOW

This Scope of Work (SOW) defines the activities the Settling Defendants shall perform under the terms of the Consent Decree, EPA Docket No. CERCLA NHD064424153 (the Consent Decree) in order to perform the Work as specified in the Consent Decree and in the United States Environmental Protection Agency (EPA) Record of Decision (ROD) signed by the Regional Administrator, Region I, on June 28, 1990, for the Coakley Landfill Site, as amended by the Explanation of Significant Differences (ESD) dated March 22, 1991. Sections C, D and E of this Appendix give an overview and general description of the remedies for consolidation of sediments in the wetlands (Section C), capping the landfill (Section D) and treating the contaminated groundwater (Section E). Sections F, G, and H of this Appendix set forth in greater detail the requirements and procedures that the Settling Defendants shall follow during the Remedial Design (Section F), Remedial Action (Section G) and Operation and Maintenance (Section H) phases of the work. Section I of this Appendix sets forth the schedule of deliverables.

B. DEFINITIONS

The definitions provided in the Consent Decree are incorporated herein by reference. In addition, the following definitions shall apply:

1. Aquifer - A geological formation, or group of formations, capable of producing usable amounts of groundwater to wells and springs.

2. Compliance Boundary - The point at which groundwater shall, at a minimum, meet Cleanup Levels, as specified in the ROD; specifically, the current property boundary of the Coakley Landfill on the south, west and east sides and, for the north, northeast, and northwest sides of the landfill, a line which is at all points within 200 feet from the current toe of the slope of the landfill. The exact location of said boundary consistent with the foregoing sentence shall be determined by EPA in connection with its approval of the final design.

3. Groundwater - Water below the land surface in a zone of saturation. On-site groundwater is that water within the compliance boundary of the landfill while off-site groundwater is that water beyond the compliance boundary of the landfill.

4. Hydraulic barrier - A dynamic artificial groundwater divide created through the use of extraction and/or injection systems in order to prohibit groundwater movement from contaminated areas to less contaminated or uncontaminated areas.

5. Overburden - The unconsolidated rock and soil material overlying bedrock.

6. Best Efforts - Notwithstanding any other provision in the Consent Decree, the term, "best efforts" as used in Paragraphs 29 and 30 of the Consent Decree includes the payment by Settling Defendants of reasonable sums of money to obtain access and institutional controls to implement the Consent Decree and Scope of Work. Pursuant to Paragraph 30 of the Consent Decree, the sums that the Settling Defendants shall reimburse the United States or the State for costs incurred in obtaining access or institutional controls shall include the amount of compensation paid.

C. OVERVIEW OF REMEDY FOR CONSOLIDATION OF SEDIMENTS IN THE WETLAND

In order to restore the wetlands adjacent to the northwest corner of the Site, this remedy involves excavating eroded sediments in the wetlands, as estimated in the Feasibility Study to be approximately 2000 cubic yards, adjacent to the northwest corner of the Site and consolidating those sediments into the landfill before constructing the multi-layer cap on the landfill. The Settling Defendants shall sample and clean up sediments to the extent consistent with the wetland restoration plan. The Settling Defendants shall perform an investigation to define the extent of sediments in the wetlands to be consolidated. This investigation shall estimate the depth of the sediments in the wetlands, confirm the location of the sediments denoted as area 6 in Attachment 3 hereto, and confirm the amount of sediments to be consolidated into the landfill.

1. Cleanup Levels for Soils and Sediments

At the conclusion of excavation and restoration of the wetlands, the concentrations of each Indicator Compound in the wetland sediments shall be at or below the Cleanup Standard listed below.

Indicator Compound	Cleanup Standard (mg/kg)
Benzene	0.055
Tetrachloroethene	0.13
2-Butanone (MEK)	0.8
Phenol*	2.3
Diethyl phthalate	900
Chlorobenzene	9.4
Trans-1,2-dichloroethene	2.2

*-Phenol refers to the compound phenol not the phenolic class of compounds.

2. Performance Standards for Removal of Sediments in the Wetlands

The Settling Defendants shall excavate the sediments from the wetlands adjacent to the northwest side of the landfill and shall consolidate these excavated sediments onto the landfill. In conducting the excavation of the sediments, the Settling Defendants shall take every measure feasible and practicable to avoid impacts on and disturbance to wetland areas, and shall minimize impacts to the flora and fauna to the maximum extent practicable. In performing the excavation, Settling Defendants shall meet the following requirements:

a. The Settling Defendants shall, to the extent practicable, perform all work during low water periods to avoid the need for dredging, and shall design all work to minimize the potential migration of sediments to other portions of the wetlands.

b. The Settling Defendants shall use appropriate engineering controls such as coffer dams, silt barriers, and/or bales of hay, to isolate the sediments in the wetlands and to minimize suspension and downstream transport of these sediments.

The Settling Defendants shall test the remaining soils by analyzing representative samples of those soils according to EPA CLP Methods or SW-846 Third Edition and its updates, to confirm that the remaining soils do not exceed the Cleanup Levels for soils and sediments for the indicator compounds listed above.

Following the completion of the sediment excavation, the Settling Defendants shall restore the wetlands where sediments were removed and any other wetlands negatively affected by the remedial work to a condition similar to that of the immediately adjacent wetlands. This restoration shall, if necessary, include replacing any soils with clean fill similar to the soils in the natural wetlands adjacent to the excavation, in order to appropriately grade the area affected by removal of the sediments.

This remedy shall also include continued evaluation of the effectiveness of wetlands restoration and maintenance of the wetlands for a minimum of ten years or until approved by the EPA as complete.

In designing, constructing, operating, maintaining, and monitoring the remedial technology for removal of sediments in the wetlands, the Settling Defendants shall comply with all statutes and regulations identified in Appendix B, Tables 9 and 14 through 18 to the ROD and all applicable requirements set forth in Sections F, G, H, and I of this SOW.

The Settling Defendants shall conduct all activities involving the wetlands in a manner consistent with Executive Order 11990 and 40 CFR Part 6. The Settling Defendants shall conduct all activities in the wetlands in a manner utilizing the practicable

alternative that will have the least adverse impact on the aquatic ecosystem and the environment, pursuant to § 404 of the Federal Clean Water Act.

D. OVERVIEW OF REMEDY FOR CAPPING THE LANDFILL

For the waste disposal area of the Coakley Landfill, the Settling Defendants shall implement a remedial action that shall consist of placing a multi-layer cap system over the area. The approximate area to be covered by the multi-media cap is shown on Attachment 2 of this Appendix to the Consent Decree. As part of this phase of the remedial action, the Settling Defendants shall also construct an active interior gas collection/recovery system.

1. Performance Standards for Capping the Landfill

The Settling Defendants shall design, construct, operate and maintain the multi-layer cap on the landfill. The Settling Defendants shall comply with all statutes and regulations identified in Appendix B, Tables 9 and 14 through 18 to the ROD and all applicable requirements set forth in Sections F, G, H, and I of this SOW.

The Settling Defendants shall design the cap system to prevent or significantly reduce landfill leachate generation and off-site migration of contaminants which could result in contamination of nearby surface water and groundwater. For long-term performance with minimum maintenance, the Settling Defendants shall design the final cover to promote drainage, minimize erosion, preclude accumulation of gas pressures, and accommodate settling and subsidence. The Settling Defendants shall design, construct and maintain the cap in accordance with 40 CFR Part 264 Subparts G and N, New Hampshire Admin. Code He-P 1905.08(d) and (f) (1990), and Technical Guidance Document EPA/530-SW-89-047 dated July, 1989.

The final multi-layer cap design shall comply with the recommendations of the Technical Guidance document "Final Covers of Hazardous Waste Landfills and Surface Impoundments" (EPA/530-SW-89-047). The design shall include the following elements, from top to bottom:

a. a minimum two-foot-thick soil layer for vegetation,

b. a minimum one-foot-thick granular drainage layer, with a permeability greater than or equal to 1×10^{-2} cm/sec,

c. a flexible membrane liner (FML) at least 40 mils thick, below the maximum depth to frost penetration, and

d. a two-foot-thick underlying clay barrier of low-permeability soil with a permeability less than or equal to 1×10^{-7} cm/sec.

Settling Defendants may propose for EPA consideration a geomembrane material of equivalent or lower permeability for component d. above (Section D.1.d.). For the side slope of the landfill, Settling Defendants may propose minor modifications, based on sound engineering practices, to a. through d. above (Section D.1.a., b., c. and d). Settling Defendants may make such proposals in addition to but not in place of the submissions required by the ROD and this SOW. Unless and until EPA, in its unreviewable discretion, adopts the proposals, the submission of such proposals shall not in any way obviate the Settling Defendant's obligation to perform the Remedial Design and the Remedial Action required by the ROD according to the schedule set out in the Consent Decree and this Scope of Work.

Prior to placing the cap over the Coakley Landfill Area, the Settling Defendants shall excavate and redeposit onto the landfill approximately 30,000 cubic yards of material from the east, west and south sides of the landfill (see Attachment 3), based on estimates in the Feasibility Study, to reduce the area to be capped and to facilitate the construction of the cap. During excavation Settling Defendants shall use appropriate engineering methods to control odor and hazardous emissions, which may include the use of vapor suppression foam. Settling Defendants shall conduct continuous ambient air monitoring throughout excavation in order to confirm that air quality standards are not exceeded. Any exceedance of levels at air monitoring locations established under Section F.2.a.(3)(b)(ii) of this SOW shall result in immediate cessation of excavation activities until EPA approves a corrective action plan. In addition, prior to placing the cap over the landfill, the Settling Defendants shall excavate and deposit onto the landfill sediments from the wetlands, as described in Section C of this SOW.

The Settling Defendants shall grade and compact Site soils as shown in the ROD Appendix A, Figures 7 and 8, with minimal disturbance of buried wastes, to form a proper sub-base for the cap. The Settling Defendants shall ensure that the final slope is free from surface irregularities and shall design the slope to provide proper drainage and prevent erosion. The Settling Defendants shall control runoff and sedimentation during construction activities by using silt fences, sedimentation ponds, or other means, in order not to disturb or negatively impact the wetlands or other areas adjacent to the landfill.

As part of the capping procedure, the Settling Defendants shall also collect and treat landfill gases, such as methane, that are generated below the cap. The Settling Defendants shall vent methane and other decomposing gases by means of an active interior gas collection/recovery system, which shall prevent off-site migration of gas. The Settling Defendants shall treat the collected gases on site by a thermal destruction process, shall minimize the emissions generated by this process using a control technology that meets federal and state air requirements, and shall confirm emission levels by monitoring.

The Setting Defendants shall coordinate the construction of the landfill cap with the construction of the gas collection and groundwater collection systems, in order to accommodate construction below the multi-layer cap. The Settling Defendants shall install the landfill gas collection piping and the landfill site groundwater wells and, if required by the design approved by EPA, trenches before or during the cap construction phase. The Settling Defendants shall seal any perforations made to the FML and other layers of the cap, in order not to compromise the integrity of the FML and the overall performance of the multi-layer cap.

E. OVERVIEW OF REMEDY FOR TREATING CONTAMINATED GROUNDWATER

For groundwater contaminated with hazardous substances, the Settling Defendants shall implement remedial actions to prevent the off-site migration of groundwater contaminated above Cleanup Levels, and to remove contaminants so that the groundwater attains Cleanup Levels (as defined below in Section E.1.) at the compliance boundary (as defined in Section B of this SOW). These remedial actions include extraction, treatment, and recharge of treated groundwater, and, if necessary, discharge of treated groundwater to the surface water (collectively the "groundwater treatment system"). The Settling Defendants shall operate and maintain the groundwater treatment system until the Cleanup Levels are achieved and sustained and the groundwater quality is protective of public health and the environment at the compliance boundary. EPA may review the effectiveness of the groundwater treatment system during review conducted pursuant to Section 121(c) of CERCLA.

1. Cleanup Levels for Groundwater

At the conclusion of the groundwater remediation, the concentrations of contaminants in the groundwater at the compliance boundary shall be at or below the Cleanup Standards listed below.

Contaminant	Cleanup Standard (ug/L)
Benzene	5
2-Butanone (MEK)	200
Phenol*	280
Diethyl phthalate	2,800
Chlorobenzene	100
Tetrachloroethene	3.5
Trans-1,2-dichloroethene	100
Arsenic	50
Chromium	50
Nickel	100

*-Phenol refers to the compound phenol not the phenolic class of compounds.

2. Technology for Restoring Groundwater

The Settling Defendants shall design, construct, operate and maintain the groundwater treatment system to achieve the Cleanup Levels in accordance with the following:

a. The Settling Defendants shall design the groundwater extraction system to attain the Cleanup Levels in the groundwater at the compliance boundary. The Settling Defendants shall design the groundwater extraction system to remove contaminated groundwater from under the landfill, using wells and, if appropriate, extraction trenches and to prevent the migration of contaminants away from the source area.

b. The Settling Defendants shall design the groundwater system to attain Cleanup Levels in the groundwater at the compliance boundary as soon as practicable and with a design goal of ten years.

c. The Settling Defendants shall construct a groundwater treatment system that shall consist of metals precipitation, an air stripping tower or towers and biological treatment, unless EPA, in its unreviewable discretion, approves an alternate treatment technology pursuant to Section F.2.a.(2)(f) of this SOW. The air stripping towers shall include activated carbon filter columns or an incinerator to treat VOC-contaminated air prior to its emission into ambient air.

d. The Settling Defendants shall design and operate the groundwater treatment system so that effluent discharged from the system meets the Cleanup Levels and all applicable or relevant and appropriate federal and New Hampshire groundwater discharge requirements. The Settling Defendants shall monitor the treatment system to ensure that the effluent meets all such levels and requirements.

e. The Settling Defendants shall, whenever possible, discharge treated water to groundwater downgradient from the Site. During periods of high groundwater, the Settling Defendants may need to discharge some or all of the treated water to the surface water. The Settling Defendants shall treat effluent which is discharged to the surface water with biological treatment or activated carbon filtration unless EPA, in its unreviewable discretion, approves alternative technology, as necessary to meet federal and state drinking water discharge requirements and ambient water quality criteria.

3. Performance Standards for Contaminated Groundwater Treatment System

The Settling Defendants shall design, construct, operate and maintain the groundwater treatment system in compliance with all statutes and regulations identified in Appendix B, Tables 9 and 14 through 18 to the ROD and all applicable requirements set forth in Sections F, G, H, and I of this SOW.

The Settling Defendants shall test the sludge created by the treatment system to see if it constitutes a RCRA hazardous waste. If so, the Settling Defendants shall transport such sludge to a RCRA-licensed hazardous storage, treatment and disposal facility, where the sludge will be properly disposed.

The Settling Defendants shall design, construct, operate, and maintain the groundwater treatment system, which may be handling hazardous wastes. If the system is handling hazardous waste, it shall do so in accordance with all applicable and relevant and appropriate federal and state waste requirements, including, if appropriate, hazardous waste requirements.

The Settling Defendants shall also comply with applicable or relevant and appropriate sections of 40 C.F.R. Part 264, and the Solid Waste Disposal Act, as amended, 42 U.S.C. §§ 6901 et seq., and regulations promulgated thereunder, to the extent that federal regulations governing hazardous wastes have been promulgated for which there is no New Hampshire counterpart under the authorized State program.

The system components relating to air emissions shall comply with N.H. Admin. Code Air Parts 604-606, and all remedial actions must comply with Fugitive Dust Emission Control requirements of N.H. Admin. Code Air Part 1002. In addition, Settling Defendants shall comply with the ESD requirements for air emissions, since the Site is in an ozone non-attainment area. The air stripper emissions shall have an activated carbon unit or incinerator on line to fulfill the agency's preference for treatment of waste.

Any discharge of treated groundwater to groundwater at the Site shall meet the substantive requirements of the New Hampshire groundwater quality criteria in accordance with RSA 149:8, III; N.H. Admin. Code Ws 410, Protection of Ground Water.

Any discharge of treated groundwater to surface water shall meet the substantive requirements of the National Pollutant Discharge Elimination System, 40 C.F.R. Part 125, and New Hampshire Administrative Code Ch. Ws 430, Parts 437 and 439, Federal Ambient Water Quality Criteria, the Federal Clean Water Act (CWA), 33 U.S.C. §§ 1251 et seq., and regulations promulgated thereunder, and the Safe Drinking Water Act (SDWA), 42 U.S.C. § 300(f) et seq., and regulations promulgated thereunder.

The Settling Defendants shall develop and maintain an Operation and Maintenance Program that will ensure the long-term, continued effectiveness of the groundwater extraction and treatment system, as set forth in Section H of this SOW. The Settling Defendants shall perform the required activities in the Operation and Maintenance Program until Cleanup Levels have been met.

a. The Settling Defendants may request that EPA approve a plan to cease extraction and treatment of contaminated groundwater when two consecutive quarterly groundwater sampling rounds provide data showing groundwater Cleanup Levels have been achieved. The Settling Defendants shall demonstrate that

migration of the remaining contaminated groundwater from under the landfill will not, in the future, cause groundwater at the compliance boundary to exceed Cleanup Levels. Pending agreement by EPA to cease extraction and treatment of contaminated groundwater, the Settling Defendants shall continue to operate and maintain the contaminated groundwater treatment system as approved by EPA under this SOW and the Consent Decree.

b. Following agreement by EPA that Settling Defendants may cease extraction and treatment of contaminated groundwater pursuant to E.3.a. above, the groundwater extraction and treatment system equipment for the Coakley Landfill shall remain in place until the Settling Defendants can demonstrate through the groundwater monitoring program that the Cleanup Levels have been met for a period of three consecutive years after cessation of the groundwater extraction and treatment system for the Coakley Landfill, in accordance with the procedures in 40 C.F.R. 264.100(d) and (f).

c. If, at any time during the three year period of monitoring pursuant to E.3.b. above, the groundwater contamination exceeds Cleanup Levels at the compliance boundary, the Settling Defendants shall recommence operation and maintenance of the system. Unless directed by EPA, Settling Defendants shall recommence operation and maintenance of the entire system. The Settling Defendants shall continue such operation until the requirements of E.3.a. above are again met, after which the obligations of E.3.b. and c. follow. Settling Defendants' obligations to operate until attainment is achieved, monitor to determine if attainment is sustained, and restart operations if attainment is not sustained, as set forth in E.3.a. through c., shall continue until Settling Defendants can demonstrate that for a period of three consecutive years Cleanup Levels are sustained without pumping in accordance with E.3.b. above, after which Settling Defendants shall implement the long-term monitoring program referenced in H.2.

F. REMEDIAL DESIGN

The remedial design process shall consist of initial remedial steps, pre-design steps, and a remedial design work plan. The Settling Defendants shall prepare separate work plans for the pre-design steps and the remedial design work plan and shall submit them to EPA for review and approval.

1. Initial Remedial Steps

a. Design Contractor

(1) Within twenty-one (21) days after the lodging of the Consent Decree, the Settling Defendants shall submit to EPA the names and qualifications of the contractors from whom Settling Defendants will solicit proposals to perform the remedial design tasks set forth in this SOW, in accordance with the Consent Decree. EPA will, after reasonable opportunity for review and comment by the State, issue, in writing, a notice of

the names of the contractor(s) it disapproves or an authorization to proceed.

(2) Within eighty-four (84) days after EPA issues an authorization to proceed, the Settling Defendants shall submit to the EPA a Letter of Acceptance from the selected Remedial Design Contractor(s), copies of the signed contract(s) or any interim agreement allowing the contractor(s) to proceed with the Work until a final contract is executed, the names of the unsuccessful bidders and summaries of the amounts they bid, and the final bid package(s) from the selected contractor(s). Settling Defendants shall submit a signed contract to EPA when it is obtained from the contractor(s).

b. Health and Safety Plan

(1) Within one hundred thirty-three (133) days after EPA issues the authorization to proceed under Section F.1.a.(1) of this SOW, the Settling Defendants shall develop and submit to EPA for review a site-specific Health and Safety Plan including a Contingency Plan in accordance with Attachment 1 of the SOW and in compliance with 40 CFR §264 Subpart D and New Hampshire Admin. Code He-P 1905.08(d)(4)i.

c. Site Security Plan

(1) Within one hundred twelve (112) days after EPA issues the authorization to proceed under Section F.1.a.(1), the Settling Defendants shall complete a study of existing site security measures (e.g. gate, fence, signs) and shall submit to EPA for review and approval by EPA a Site Security Plan. This plan shall detail the results of the study and shall specify appropriate measures to control unauthorized entry onto the Site, including construction of a security fence encompassing the landfill area, and posting signs around the perimeter of the Site alerting the public to the presence of contaminated areas and remedial action activities at the Site. The security plan shall also address the need for 24-hour security services. The Settling Defendants shall design the security plan to reflect and complement the level of work activity on Site.

d. Site Survey/Site Access/Site Map

(1) Within one hundred seventy-five (175) days after EPA issues the authorization to proceed under Section F.1.a.(1), the Settling Defendants shall submit to EPA a topographical or otherwise appropriate land survey which delineates property boundaries, the apparent boundary of waste in the landfill, utilities, rights of way, and easements on all lands to which access may be required at any time to conduct the Work. The topographical survey drawing submitted shall have an EPA pre-approved specific scale and contour interval.

2. Pre-Design Steps

a. Within two hundred seventeen (217) days after the EPA issues the authorization to proceed under Section F.1.a.(1), the Settling Defendants shall submit to EPA for review and approval a Project Operations Plan, a Pre-Design Work Plan, and an Environmental Monitoring Plan, as set forth below.

(1) The Project Operations Plan shall include the following components, each of which is described in detail in Attachment 1 to this SOW:

(a) A Quality Assurance/Quality Control Plan;

(b) The Health and Safety Plan developed pursuant to Section F.1.b, updated as appropriate;

(c) A Field Sampling and Analysis Plan; and

(d) A Project Management Plan.

(2) The Pre-Design Work Plan shall specify in detail the investigations necessary for the design and implementation of the remedial actions. The Pre-Design Work Plan shall include, for each such investigation, a statement of its purpose and objectives, an identification of the specific activities necessary to conduct the investigation, and a timetable/schedule for performance of those activities, including submittal of the final study reports for each investigation. The investigations treated in the Pre-Design Work Plan shall include, at a minimum, investigations of wetlands sediments, landfill capping, landfill gas treatment, groundwater extraction, and groundwater treatment. The specifics of these investigations are set forth below.

(a) Consolidation of Sediments - The Settling Defendants shall, at a minimum:

(i) Perform an investigation to define the extent of sediments in the wetlands to be consolidated. This investigation should estimate the depth of the sediments in the wetlands, confirm the location of the sediments denoted as area 6 in Attachment 3 hereto, and confirm the amount of sediments to be consolidated into the landfill.

(ii) Develop a wetlands restoration plan whose purpose is to replicate the conditions of the wetlands adjacent to the wetlands where sediments are removed. In developing this plan, the Settling Defendants shall perform a detailed assessment of the pre-remediation condition of the wetland areas likely to be disturbed by the sediment remediation. The Settling Defendants shall also identify those factors that are essential to successful restoration. Such factors may include, but not necessarily be limited to,

replacing and regrading hydric soils, controlling surface water and groundwater flow, and reestablishing vegetation. The Settling Defendants shall complete a report identifying and assessing the function of the wetlands and associated habitats for fish and wildlife. The Settling Defendants shall also include a plan for monitoring selected features of the restored wetland at periodic intervals, as described in Section F.2.a.(3) of this SOW.

(b) Capping of the Landfill - The Settling Defendants shall perform an initial assessment of the multi-layer cap design in compliance with SOW Section D. This study shall include the availability and costs of materials proposed for each layer of the cap, the design assumptions and bases for layer thickness and materials chosen, the friction angle for each layer, the expected cost and time requirements for operation and maintenance of the cap and expected lifetime of the cap, expected difficulties during construction, expected failure and infiltration rates and a comparison to other cap designs. The assessment shall also include, at a minimum:

(i) An investigation to define the horizontal and vertical extent of landfill refuse. Accurate information is essential to design the limits of capping.

(ii) An investigation into stability, settlement, and subsidence problems associated with a landfill such as the Coakley Landfill, which contains heterogeneous waste. The Settling Defendants shall conduct geotechnical testing prior to construction to assess slope stability and potential settlement of the landfill. Such testing shall include, but not necessarily be limited to, a topographic survey, soil borings, construction and settlement monitoring of the test fill, and monitoring of the inclinometers on the slopes. The Settling Defendants shall design and construct the final cover to accommodate settling and subsidence and to minimize the potential for disruption of continuity and function of the final cover. The final grade after subsidence of the cover shall be at the actual desired design elevation.

(iii) An investigation into the appropriate landfill configuration. The Settling Defendants shall grade or "contour" the slopes in accordance with RCRA closure guidelines, NH standards and good engineering design practices. The side slopes of the landfill's final cover shall be no steeper than 3 (horizontal) : 1 (vertical). The

Settling Defendants shall flatten slopes steeper than 3 : 1 by filling in those areas with compacted clean fill or stabilized by appropriate methods. To adequately perform the slope stability analyses, the Settling Defendants shall assess the strength properties of the cover system components, the waste, and the foundation soils, along with seepage conditions. The Settling Defendants shall consider benches with ditches as part of a cover design to control drainage and limit slope lengths to meet slope stability and erosion requirements.

(iv) An investigation using the HELP model to calculate percolation in each layer of the landfill for various cap designs. The Settling Defendants shall verify the coefficient of run off, default data, climatologic data and soil data used by the HELP model. The Settling Defendants shall submit to EPA for approval the input parameters used in the HELP model as appropriate to this Site, and shall calculate drainage from the base of the landfill, hydraulic head of the base of the landfill, and surface runoff.

(c) Active Interior Gas Collection/Recovery System - EPA has preliminarily identified three thermal treatment technologies for gas treatment: combustion, enclosed ground flares and incineration. The Settling Defendants' shall conduct an engineering analysis to evaluate these thermal destruction technologies that, at a minimum, shall include:

(i) Conducting a field investigation to obtain representative samples of landfill gases being generated by the landfill. Settling Defendants shall obtain the gas samples from three separate areas of the landfill. Setting Defendants shall analyze the samples to identify and quantify the major constituents of the landfill gas.

(ii) Estimating landfill gas generation volumes based upon waste depth, landfill age, local climate, and other Site factors.

(iii) Calculating and evaluating the destruction and removal efficiencies for each of the major constituents identified in the landfill gas field investigation. Settling Defendants shall conduct the evaluation using existing performance test data for each technology.

(iv) Conducting an evaluation of emissions for each technology to ensure that emissions levels will be protective and will comply with the applicable or relevant and appropriate requirements.

(v) Conducting a cost analysis for design, construction and operation and maintenance (O&M) for thirty (30) years for each technology.

Based on this engineering analysis, the Settling Defendants shall propose to EPA a thermal destruction technology. The proposal shall be subject to EPA approval, based on sound engineering principles, after EPA reviews all reports the Settling Defendants generate after completing the engineering analysis outlined above.

(d) Groundwater Extraction System - The Settling Defendants shall perform a hydrogeological assessment of the groundwater extraction system to determine the final location, number and size of extraction wells and, if required by the design approved by EPA, trenches, in compliance with SOW Section E. This study shall evaluate extraction rates and determine influent capacities of the treatment plant. The study shall also evaluate cyclic pumping and/or other techniques to enhance system performance. The assessment shall be sufficient to support the design of an effective groundwater collection/extraction system that meets the objectives of the ROD and Section E of this Scope of Work. At a minimum, the hydrogeological assessment shall include:

(i) a systematic assessment of all existing hydrogeologic work conducted at the Site;

(ii) a well inventory and inspection, with an evaluation of well suitability and integrity for future sampling;

(iii) geologic cross-sections to identify data gaps and inaccuracies;

(iv) an overburden water table map based on a recent round of water levels and re-survey, as well as an investigation to determine the groundwater elevation in the landfill and the directions of flow;

(v) a bedrock "aquifer" map of groundwater contours;

(vi) refinement of the elevation of bedrock surface map;

(vii) identification of design criteria for vertical and horizontal placement of the leachate collection and groundwater extraction system;

(viii) a plan for conducting pump tests in several locations at the landfill perimeter;

(ix) identification of contaminated groundwater extraction system design elements and current data gaps; and

(x) a plan of proposed site activities to address data gaps, which may include additional soil borings, piezometer, and the installation and sampling of overburden and bedrock wells.

(e) Groundwater Treatment System - The Settling Defendants shall conduct an engineering analysis of the selected treatment processes for the groundwater treatment system: metals removal, air stripper, and biological treatment. The Settling Defendants shall conduct the engineering analysis to confirm the proposed design and operating conditions. The engineering analysis shall include an assessment of Site groundwater conditions; calculated treatment process contaminant removal efficiencies; an assessment of treatment costs, reliability, implementability, and applications at other Superfund sites; and bench scale treatability studies to confirm the performance of the processes. At a minimum, the Settling Defendants shall perform the engineering analysis to satisfy the following goals:

(i) assess treatment process contaminant removal effectiveness;

(ii) properly size the equipment;

(iii) identify expected Operation and Maintenance requirements;

(iv) identify the type and size of air emissions control equipment; and

(v) identify biological or other treatment equipment type and effectiveness for surface water discharge.

(f) Alternative Groundwater Treatment Pre-Remedial Design Study - In addition to, and not in place of, the pre-design studies set forth in Section F.2 of this SOW, the Settling Defendants may, at their sole cost, conduct an alternative groundwater treatment pre-remedial design study. If Settling Defendants conduct such a study, Settling Defendants shall provide results to EPA and the State simultaneously with the Pre-Design

Reports (Section F.2.c.) required in accordance with the ROD, this SOW, and the pre-design study steps in Section F.2.

The alternative groundwater treatment pre-remedial design study may include consideration of alternate groundwater treatment technologies. The Settling Defendants may propose alternative technologies for the metals precipitation, air stripping and biological treatment that EPA may, in its unreviewable discretion, approve if appropriate. Settling Defendants may make such proposals for alternative groundwater treatment technologies in addition to but not in place of the submissions requirements of the ROD and this SOW for groundwater treatment technologies.

Unless and until EPA, in its unreviewable discretion, adopts the alternative groundwater treatment technologies and the alternative groundwater treatment pre-remedial design, the submission of such proposals shall not in any way obviate the Settling Defendants' obligation to perform the Remedial Design and the Remedial Action required by the ROD and the SOW according to the schedule and workplans set out in the Consent Decree and this Scope of Work.

(3) The Environmental Monitoring Plan shall include monitoring programs relating to the groundwater, air, and wetlands remediation, as set forth below.

(a) The Settling Defendants shall develop a groundwater monitoring program for the following purposes: to monitor contaminant concentrations under the landfill and along the compliance boundary over time; to evaluate the hydraulic effectiveness of the remedial action and attainment of the groundwater Cleanup Levels; and to ensure that the groundwater contaminant levels in treated effluent do not exceed Performance Standards. The groundwater monitoring program shall include, but not necessarily be limited to, the following components:

(i) Performance monitoring - The Settling Defendants shall implement a program consistent with 40 C.F.R. § 264.100(d) and N.H. Admin. Code He-P 1905.08(d)(4)j, which require implementation of a monitoring program to assess the effectiveness of a corrective action program. To ensure compliance with groundwater discharge requirements, the Settling Defendants shall, no less often than monthly, sample treatment plant effluent that is discharged to groundwater for VOCs using EPA Method 524.2 or updated versions of this method. To ensure compliance with substantive NPDES requirements, the Settling Defendants shall, no less often than monthly,

sample treatment plant effluent that is discharged to surface water for VOCs using EPA Method 524.2, for semi-volatiles using EPA Method SW-846, and for metals using the EPA Contract Laboratory Program Methods (CLP Methods) or another method described in 40 CFR Part 136, until EPA determines that an equivalent method is appropriate.

(ii) Groundwater monitoring - The Settling Defendants shall sample selected monitoring wells on a quarterly basis beginning within thirty (30) days of EPA approval of the Pre-Design Work Plan. The Settling Defendants shall continue such quarterly sampling for at least the first two years of full-scale operation of the groundwater extraction and treatment system. Subsequently, the Settling Defendants shall sample the wells at an appropriate sampling frequency, but no less often than annually, as determined by EPA after review of the results. The Settling Defendants shall analyze VOC samples using EPA Method 524.2, semi-volatile compounds using EPA Method SW-846 and CLP Methods, metals using CLP Methods or another method described in 40 CFR Part 141, or their updated versions, until EPA determines that an equivalent method is appropriate to determine compliance with MCLs. EPA may add or delete specific analysis parameters, depending on sampling results and observed trends. The Settling Defendants shall measure groundwater levels prior to sampling monitoring wells.

(iii) Residential Well Sampling - The Settling Defendants shall sample selected residential wells using overburden or bedrock aquifers within a mile radius from the Site semi-annually to confirm that migration of on-site groundwater is not occurring or impacting these wells. The Settling Defendants shall sample and test the wells for VOCs using EPA Method 524.2 or its updated version.

(b) The Settling Defendants shall develop an air monitoring program which shall include, but not necessarily be limited to, the following components:

(i) Performance monitoring - The Settling Defendants shall sample emissions monthly at the outlets of the carbon columns for the stripping towers and at the outlets of the thermal destruction system for the active gas collection and treatment. The Settling Defendants shall install soil gas monitoring wells to determine the effectiveness of the active gas collection system

as it operates, so that operational adjustments can be made as needed. The Field Sampling and Analysis Plan shall describe sampling frequency, techniques and monitoring well locations.

(ii) Ambient sampling - The Settling Defendants shall install and maintain air quality sampling stations to confirm that air quality during soil consolidation and emissions from the air stripper and landfill gas treatment do not exceed ambient air quality standards and are protective of public health and the environment. The Settling Defendants shall propose for EPA's approval, with opportunity for review and comment by the State, air monitoring locations and air quality standards that shall meet substantive applicable and relevant and appropriate federal and state air regulations. Continuous ambient air monitoring shall be conducted throughout excavation in order to confirm that the established air quality standards are not exceeded. Any exceedance of said levels at the monitoring locations shall result in immediate cessation of excavation activities until EPA approves a corrective action plan.

(c) The Settling Defendants shall develop a wetlands monitoring program which shall include, but not necessarily be limited to, the following components:

(i) Pre-Remediation Assessment - The Settling Defendants shall make an inventory of the indigenous flora and fauna in conjunction with the study set forth in Section F.2.a.(2)(a).

(ii) Performance monitoring - The Settling Defendants shall monitor surface drainage during excavation and cap construction. Prior to wetlands restoration, the Settling Defendants shall sample the remaining soils to confirm that those soils do not exceed Cleanup Levels, as described in Section C.

(iii) Ambient monitoring - The Settling Defendants shall monitor the wetlands restoration at one year intervals to verify that restoration has been maintained in accordance with the approved wetlands restoration plan. The Settling Defendants shall evaluate the effectiveness of the wetlands restoration and maintain the wetlands in a restored state for a minimum of ten years or until approved by the EPA as complete.

The Settling Defendants shall monitor the wetlands adjacent to the Site to gauge the effect of

pumping the treated water to the recharge trenches. The Settling Defendants shall monitor any changes to the wetlands during the operation of the groundwater treatment plant and report annually on the condition of the wetlands and any adverse effects to EPA.

(d) The Settling Defendants shall review and evaluate all monitoring data during the implementation of the remedial action to ensure that response objectives are achieved.

b. Within seven (7) days after the Settling Defendants receive approval of the Project Operations Plan, the Pre-Design Work Plan, and the Environmental Monitoring Plan from EPA, the Settling Defendants shall begin the pre-design work set forth in the Pre-Design Work Plan in accordance with the Pre-Design Work Plan and the schedules contained therein.

c. Within one hundred eighty-two (182) days after Settling Defendants receive approval of the Project Operations Plan, the Pre-Design Work Plan and the Environmental Monitoring Plan, the Settling Defendants shall submit for review and approval by EPA a Pre-Design Report for each investigation performed in accordance with the Pre-Design Work Plan: wetlands sediments, landfill capping, landfill gas treatment, groundwater extraction, and groundwater treatment. The Pre-Design Reports shall set forth in detail the results of the work performed and shall identify the Performance Standards for each component of the remedy.

3. Remedial Design Work Plan

a. Within forty-two (42) days after Settling Defendants receive approval of the Pre-Design Report, the Settling Defendants shall submit for review by EPA an updated Health and Safety Plan. At the same time, Settling Defendants shall submit for review and approval by EPA a Remedial Design Work Plan which shall set forth all tasks to be undertaken in connection with the design of the Remedial Action, and shall include a proposed schedule for completion of the design process. The Remedial Design Work Plan shall include, at a minimum, the schedule and tasks for the following activities:

(1) Development of detailed design plans, specifications (including schedules of implementation) and a Construction Quality Assurance Project Plan (CQAPP) in accordance with Attachment 4 of this SOW for the sediments, capping and groundwater remedies;

(2) Submission of design plans for each component of the remedy for review and approval by EPA at four stages during development of those plans, as indicated in items (a) through (d) below:

(a) Preliminary design addressing approximately 30% of the total design. The deliverables for this 30% submission will be specified in the Remedial Design Work Plan and will include, without limitation, the following items:

(i) design criteria;

(ii) results of additional field sampling;

(iii) project delivery strategy;

(iv) preliminary plans, drawings and sketches;

(v) required specifications in outline form;

(vi) preliminary construction schedule; and

(vii) with respect to the thermal treatment technologies, consideration of methods to minimize noise and nuisance impacts.

(b) Intermediate design addressing approximately 60% of the total design. The deliverables for this 60% design submission will be specified in the Remedial Design Work Plan;

(c) Pre-final design addressing 95% of the total design which shall include, at a minimum:

(i) corrected design prints and calculations with written comments to define corrections and/or additions to the 60% design plans;

(ii) plans, specifications and calculations equivalent to 95% of the overall design;

(iii) initial draft Operation and Maintenance Plan consistent with Section F.3.a.(5) and (6), below;

(iv) preliminary bid documents; and

(v) a summary of the experience and qualifications of the invited bidders.

(d) a final design addressing 100% of the total design for each site area remedy which shall include:

(i) final plans and specifications in reproducible format;

(ii) final bid documents;

(iii) an Operation and Maintenance Plan consistent with Section F.3.a.(5) and (6), below.

(3) Submission at the pre-final and final design stages of the assumptions, drawings and specifications necessary to support the analysis of compliance with Performance Standards identified in the Pre-Design Reports.

(4) Development of a final Environmental Monitoring Plan which refines the Pre-Design Environmental Monitoring Plan described in Section F.2.a.(3)(a-d), and provided with the Pre-Design Reports.

(5) Development of an Operation and Maintenance Plan that shall ensure the long-term, continued effectiveness of the groundwater extraction and treatment system. The Operation and Maintenance Plan shall include:

(a) Description of normal operation and maintenance;

(b) Description of potential operating problems;

(c) Description of routine process monitoring and analysis;

(d) Description of contingency operation and management;

(e) Operational safety plan;

(f) Description of equipment;

(g) Annual operation and maintenance budget;

(h) Recordkeeping and reporting requirements; and

(i) A cost estimate for post-closure care.

(6) Development of an Operation and Maintenance Plan that shall ensure the long-term, continued effectiveness of the landfill cap and gas collection system (GCS). Said Operation and Maintenance Plan shall include:

(a) Description of normal operation and maintenance;

(b) Description of potential operating problems;

(c) Description of routine process monitoring and analysis;

(d) Description of contingency operation and maintenance plan;

(e) Operational safety plan;

(f) Description of equipment to be available on site;

(g) Annual operation and maintenance budget;

(h) Recordkeeping and reporting requirements; and

(i) A cost estimate for long-term operation and maintenance.

b. Within seven (7) days after the Settling Defendants receive approval from EPA of the Remedial Design Work Plan, the Settling Defendants shall initiate performance of the activities set forth therein in accordance with the Plan, including all specified schedules, and shall submit for review and approval by EPA each of the items described in the Remedial Design Work Plan.

G. REMEDIAL ACTION

1. Remedial Action Contractor

a. Within twenty-one (21) days after Settling Defendants receive EPA approval of the final (100%) design, the Settling Defendants shall submit to EPA the names and qualifications of the contractors from whom the Settling Defendants will solicit bids to perform the remedial action tasks set forth in the final design in accordance with the Consent Decree. EPA will, after reasonable opportunity for review and comment by the State, issue, in writing, a notice of the names of the contractor(s) it disapproves or an authorization to proceed.

b. Within eighty-four (84) days after EPA issues an authorization to proceed, the Settling Defendants shall submit to EPA a Letter of Acceptance from the selected Remedial Action contractor(s), copies of the signed contract(s) or any interim agreement allowing the contractor(s) to proceed with the Work until a final contract is executed, the names of the unsuccessful bidders and summaries of the amounts they bid, and the final bid package(s) from the selected contractor(s). Settling Defendants shall submit a signed contract to EPA when it is obtained from the contractor(s).

2. Remedial Action Work Plan

a. Within ninety-eight (98) days after EPA issues the authorization to proceed under Section G.1.a, the Settling Defendants shall submit for review and approval by EPA a Remedial Action Work Plan for implementing the Site remedial actions and associated activities, including implementing the Operation and Maintenance Plans for each component of the remedy consistent with the approved design. This work plan shall contain:

(1) A description of all activities necessary to implement the remedial actions consistent with the ROD and all

Performance Standards, including but not limited to the following:

(a) methods for satisfying any permitting requirements;

(b) contractor mobilization/site preparation;

(c) excavation/dredging of sediments in wetland areas;

(d) restoration of disturbed wetland areas;

(e) construction of the multi-layer cap and gas collection and treatment system;

(f) construction and start-up of groundwater extraction and treatment facilities;

(g) performance monitoring of groundwater and demobilization of treatment facilities;

(h) performance monitoring of air and wetlands;

(i) operation and maintenance for each component of the remedy; and

(j) long-term environmental monitoring.

(2) A schedule for the completion of all these activities, which shall also identify milestone events in the remedial action process. The milestone schedule shall be consistent with Section I of this SOW and with schedules approved by EPA pursuant to this SOW and the Consent Decree.

b. Within fifteen (15) days after the Settling Defendants receive notice that EPA has approved the Remedial Action Work Plan, the Settling Defendants shall initiate remedial activities in accordance with the Remedial Action Work Plan and schedules contained therein.

c. During the construction period, the Settling Defendants and the Settling Defendants' contractor(s) shall meet weekly with EPA and the State regarding progress and details of construction, unless EPA waives the meeting.

d. Within thirty (30) days of completion of construction for each component of the remedial action (e.g., the excavation of the sediments in the wetland and wetland restoration, the construction of the multi-layer cap and gas collection and treatment system, and the groundwater extraction and treatment system), the Settling Defendants shall submit a final remedial construction report for each component of the remedy for approval by EPA.

H. LONG-TERM OPERATION AND MAINTENANCE

Immediately after receipt of notice that EPA has approved the Settling Defendants' final remedial construction report for a component of the remedy, the Settling Defendants shall review and update the corresponding monitoring plans developed in accordance with Section F.2.a.(3) and update the long-term Operation and Maintenance (O&M) Plan for each component of the remedy developed in accordance with Section F.3.a.(5) and (6). The Settling Defendants shall submit the updated O&M plans for EPA approval within 30 days after notice of EPA approval of said final remedial construction report. The Operation and Maintenance Plans shall include the following:

1. Landfill Cap Operation and Maintenance Plan

Settling Defendants shall update the Operation and Maintenance Plan to ensure the long-term, continued effectiveness of the landfill multi-layer cap. The Settling Defendants shall perform all required activities in the Operation and Maintenance Program for at least 30 years.

2. Groundwater Treatment Systems Operation and Maintenance Plan

Settling Defendants shall update the Operation and Maintenance Plan, including groundwater, wetland and air monitoring plan, to ensure the long-term, continued effectiveness of the groundwater extraction and treatment systems. The Settling Defendants shall perform all required activities in the Operation and Maintenance Program until Cleanup Levels are attained and sustained as set forth in Section E. Once these levels are maintained and the remedy is protective, the Settling Defendants shall implement an additional monitoring program for the Site in accordance with applicable and relevant and appropriate New Hampshire waste rules.

3. Landfill Gas Treatment Systems Operation and Maintenance Plan

Settling Defendants shall update an Operation and Maintenance Program, including the air monitoring plan, to ensure the long-term, continued effectiveness of the gas extraction and treatment systems. The Settling Defendants shall perform all required activities in the Operation and Maintenance Program as long as landfill gases are produced.

I. SCHEDULE SUMMARY

Below is a summary of tasks or deliverables and due dates which are described above. In the event of inconsistency between this Section and any textual description set forth elsewhere in the SOW, the textual description shall control.

Task/Deliverable	Due Date
Remedial Design Contractor List (Section F.1.a.(1))	21 days after lodging of the Consent Decree
Letter of Acceptance from Remedial Design Contractor(s) (Section F.1.a.(2))	84 days after EPA authorization to proceed
Health and Safety Plan (Section F.1.b.)	133 days after EPA authorization to proceed
Site Security Plan (Section F.1.c.)	112 days after EPA authorization to proceed
Site Map (Section F.1.d.)	175 days after EPA authorization to proceed
Pre Design Steps 1. Project Operation Plan (Section F.2.a.(1)) 2. Pre-Design Work Plan (Section F.2.a.(2)) 3. Environmental Monitoring Plan (Section F.2.a.(3))	217 days after EPA authorization to proceed
Pre-Design Work Plan Implementation (Section F.2.b.)	7 days after EPA approval of all Pre-Design Steps
Pre-Design Report (Section F.2.c.)	182 days after EPA approval of all Pre-Design Steps.
Remedial Design Work Plan (Section F.3.a)	42 days after EPA approval of Pre-Design Report
Remedial Design Work Plan Implementation (Section F.3.b.)	7 days after EPA approval of Remedial Design Work Plan
Remedial Action Contractor List (Section G.1.a.)	21 days after EPA approval of final (100%) design plans

Task/Deliverable	Due Date
Submission of Letter of Acceptance from Remedial Action Contractor (Section G.1.b.)	84 days after EPA authorization to proceed
Remedial Action Work Plan (Section G.2.a.)	98 days after EPA authorization to proceed
Remedial Action Implementation (Section G.2.b.)	15 days after EPA approval of Remedial Action Work Plan
Remedial Construction Reports (Section G.2.d.)	30 days after completion of construction of each component of Remedial Action
Operation and Maintenance Plans (Section H)	30 days after EPA approval of Remedial Construction Report for each component

ATTACHMENT 1
PROJECT OPERATIONS PLAN

The purpose of this attachment is to outline the specific requirements of four aspects of the Project Operations Plan: the Health and Safety Plan, the Quality Assurance and Quality Control Plans, the Field Sampling and Analysis Plans and the Project Management Plan.

A. SITE SPECIFIC HEALTH AND SAFETY PLAN

The Settling Defendants shall include a Site Specific Health and Safety Plan (HSP) developed in the Initial Remedial Steps, as part of the Project Operations Plan to be included as part of the Pre-Design Work Plan to address potential hazards to the field remedial team and the surrounding community potentially impacted by Site activities. This plan shall be consistent with the applicable guidelines of EPA's Health and Safety Planning for Remedial Investigations under CERCLA (EPA/540/G-85/002, June 1985) and the requirements of the Occupational Safety and Health Administration (OSHA) Guidelines for Hazardous Waste Operations and Emergency Response Activities (interim final rule, 29 CFR Part 1910 as amended, Federal Register Vol. 51, No. 244, December 19, 1986) and any updates to these documents.

The Settling Defendants' plan shall be adequate to assure the safety of the field team and the community during all activities conducted pursuant to the Consent Decree, including sampling, construction and operation of the remedial actions. Contingency plans shall be developed to address situations which may likely impact the off-site community.

The Settling Defendants' Health and Safety Plan shall address at a minimum the following items:

1. personal protective equipment requirements;
2. on-site monitoring equipment requirements;
3. safe working procedures specifications;
4. equipment decontamination procedures;
5. personnel decontamination procedures; and
6. special and emergency procedures, including contingency plans consistent with 40 CFR §264 Subpart D and He-P 1905.08(d)(4)i for the operation of the remedial action.

B. PROJECT ACTIVITIES QUALITY ASSURANCE/QUALITY CONTROL PLANS

The Settling Defendants shall prepare Quality Assurance/Quality Control (QA/QC) Plans to specify the procedures to be used to insure that the technical specifications of the materials and equipment are met and to specify the procedures to be used in all sampling and analyses to insure that quality data is obtained. The QA/QC Plan shall be developed for the sampling and analysis events described in the Field Sampling and Analysis Plan submitted with the Pre-Design Report. The Settling Defendants shall prepare this QA/QC plan in accordance with EPA guidance document QAMS-005/80 and Data Quality Objectives guidance documents EPA/540/G-87/003 and 004 (March 1987) and any updates to these documents. At a minimum the following topics shall be addressed in the QA/QC Plan:

1. title page with provisions for signatures of principal investigators;

2. table of contents;

3. project description;

4. project organization and responsibility;

5. quality assurance objectives for measurement data, stated in terms of precision, accuracy, completeness, representativeness, correctness and comparability;

6. sampling procedures;

7. sample chain of custody;

8. field and analytical equipment, calibration procedures, references and frequency;

9. analytical procedures, which must be EPA approved, or equivalent methods;

10. data reduction, validation and reporting;

11. internal quality control checks and frequency;

12. quality assurance performance audits, system audits and frequency of implementation and non-conformance reports;

13. preventive maintenance procedures and schedules;

14. specific routine procedures to be used to assess the precision, accuracy and completeness of data and to assess specific measurement parameters involved;

15. corrective action; and

16. quality assurance reports.

C. FIELD SAMPLING AND ANALYSIS PLAN

The Settling Defendants shall develop a Field Sampling and Analysis Plan that indicates the procedures to be followed for all samples to be taken pursuant to the Consent Decree, this SOW and the Remedial Design Work Plan. The Settling Defendants' plan shall, at a minimum, address the following elements for sampling of water, soil, sediments, air and biota during pre-design investigations and during the construction and the operation of each component of the remedy:

1. data quality objectives of the sampling effort, with particular emphasis on Performance Standard requirements;

2. type, location, rationale and construction specifications for placement of any proposed monitoring wells, well screens and borings;

3. type, quantity, frequency, and location of samples to be collected;

4. sampling methods to be used including any bio-assessment techniques, any well sampling and evaluation procedures, provisions for split sampling, split spoon sampling, composite sampling, soil and soil gas sampling, sampling preservation techniques, equipment needs and equipment cleaning and decontamination procedures, and field support requirements;

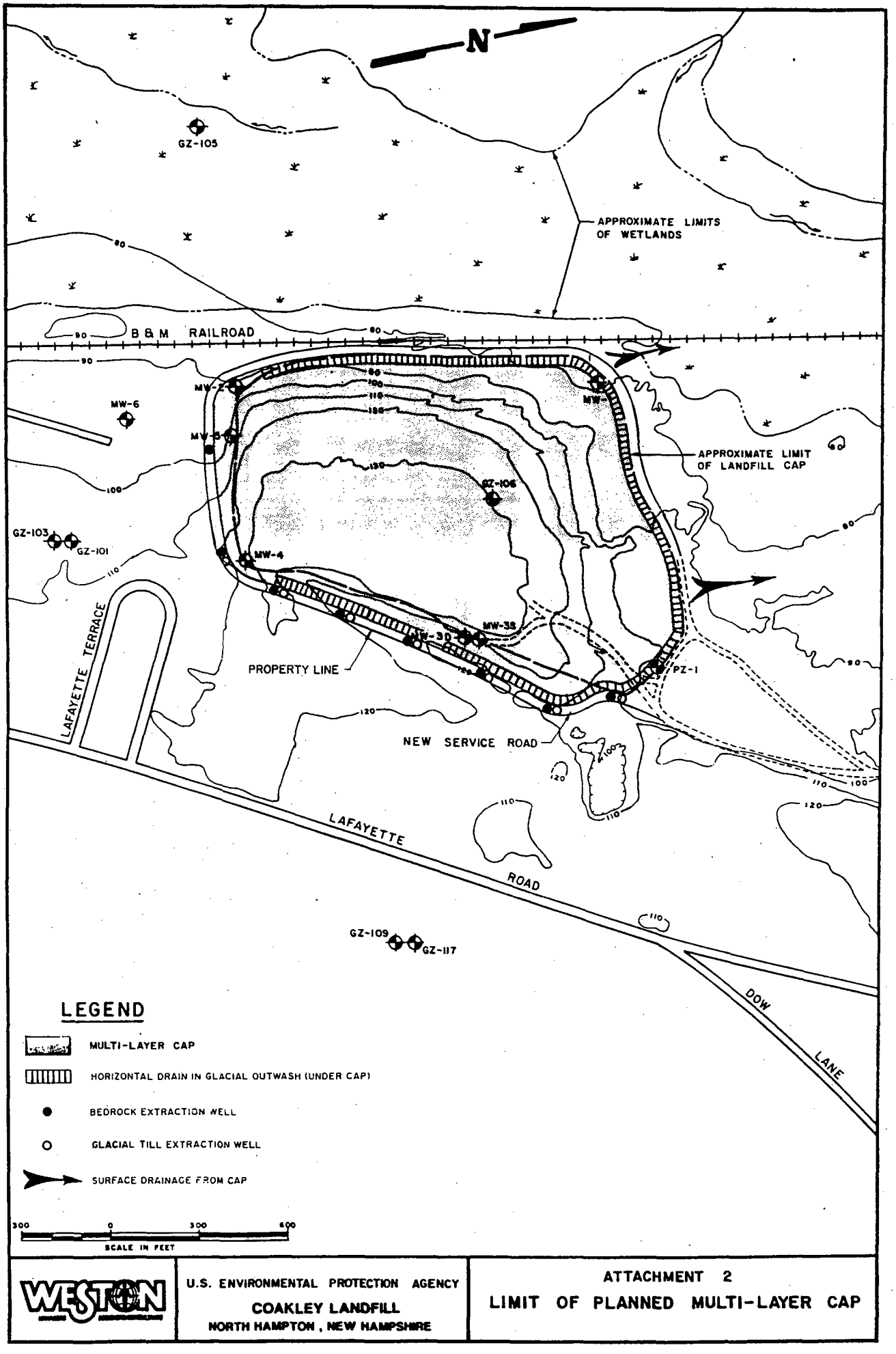
5. sample shipping and chain-of-custody procedures;

6. type of analysis to be run on each sample including reference to appropriate EPA approved/specified analytical methods; and

7. a discussion of chemical constituents of interest and historical ranges of concentrations based on available data.

D. PROJECT MANAGEMENT PLAN

A Project Management Plan to provide the project organizational structure, the responsibilities of project personnel and the field operations schedule.

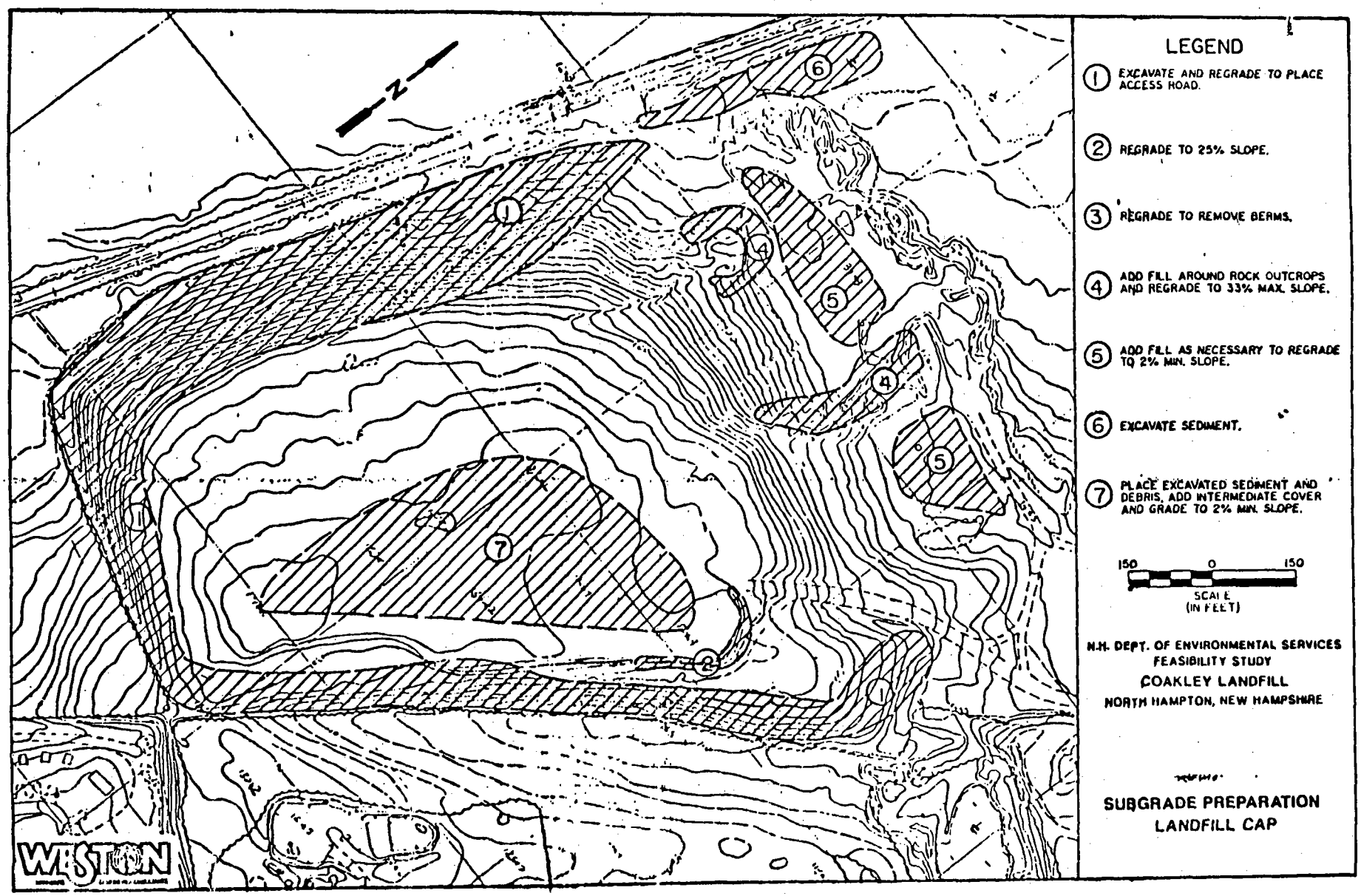


WESTON

U.S. ENVIRONMENTAL PROTECTION AGENCY
COAKLEY LANDFILL
NORTH HAMPTON, NEW HAMPSHIRE

ATTACHMENT 2
LIMIT OF PLANNED MULTI-LAYER CAP

COAKLEY LANDFILL SUBGRADE CAP PREPARATION



LEGEND

1. EXCAVATE AND REGRADE TO PLACE ACCESS ROAD.
2. REGRADE TO 25% SLOPE.
3. REGRADE TO REMOVE BERMS.
4. ADD FILL AROUND ROCK OUTCROPS AND REGRADE TO 33% MAX. SLOPE.
5. ADD FILL AS NECESSARY TO REGRADE TO 2% MIN. SLOPE.
6. EXCAVATE SEDIMENT.
7. PLACE EXCAVATED SEDIMENT AND DEBRIS, ADD INTERMEDIATE COVER AND GRADE TO 2% MIN. SLOPE.

150 0 150

SCALE (IN FEET)

N.H. DEPT. OF ENVIRONMENTAL SERVICES
FEASIBILITY STUDY
COAKLEY LANDFILL
NORTH HAMPTON, NEW HAMPSHIRE

SUBGRADE PREPARATION
LANDFILL CAP

ATTACHMENT 4
CONSTRUCTION QUALITY ASSURANCE/QUALITY CONTROL PLANS

The Settling Defendants shall prepare a Construction Quality Assurance Project Plan (CQAPP) to specify the procedures to be used to insure that the technical specifications of the materials and equipment are met and to specify the procedures to be used during construction activities. The CQAPP shall specify the procedures to be utilized to insure that the Performance Standards and technical specifications for each component of the remedy are met and shall be developed in accordance with OSWER Report No. EPA/530-SW-86-031, Construction Quality Assurance for Hazardous Waste Land Disposal Facilities, and any future relevant guidance documents. The Settling Defendants shall prepare the CQAPP in accordance with EPA guidance document QAMS-005/80 and any updates to these documents. At a minimum the following topics shall be addressed in the CQAPP:

1. title page with provisions for signatures of principal investigators;

2. table of contents;

3. project description;

4. project organization and responsibility;

5. field equipment including maintenance and decontamination;

6. internal quality control checks and frequency;

7. preventive maintenance procedures and schedules;

8. corrective action; and

9. quality assurance reports.

Attachment C
Coakley Landfill
General Description

The Coakley Landfill Site (the Site) is situated on approximately 92 acres located within the Towns of Greenland and North Hampton, Rockingham County, New Hampshire (Appendix A, Figure 1). The actual landfill area 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. Vehicles access the Site through an entrance gate located on Breakfast Hill Road, approximately 600 feet northwest of the intersection of Lafayette and Breakfast Hill Roads. The Greenland-Rye town line forms a major portion of the eastern boundary of the Site. A more detailed Site map is shown on Appendix A, Figure 2. There is a more complete description of the Site in the Remedial Investigation Report in Chapter 2, Pages 2-1 to 2-6.

Breakfast Hill Road forms the northern boundary of the Site. Privately owned properties border the Site to the west and north and include both farmland and undeveloped woodlands and wetlands. Properties abutting east and south of the Site are generally commercial or residential. The Rye Landfill, which was closed in 1987, abuts the Site directly to the northeast. The Lafayette Terrace housing development is directly southeast of the Site. The Granite Post Green Mobile Home Park lies approximately 500 feet to the south of the Site, west of Lafayette Terrace. The Boston & Maine Railroad, which runs north-south, forms the western border of the southern half of the Site.

The landfill is situated within the southernmost portion of the Site, almost completely within the Town of North Hampton. The Coakley Landfill covers approximately 27 acres, constituting the major portion of the southern section of the Site. Generally rectangular in shape, with an average width of approximately 900 feet and an average length of approximately 1,300 feet, the landfill extends to the western, southern, and eastern boundaries in the south direction.

The landfill forms a hill rising approximately 10 to 60 feet above the surrounding area. At its highest point the elevation is about 137 feet above mean sea level. Ground surface in the landfill area originally sloped gently westward. The landfill now forms a prominent raised plateau in that area, with a generally flat upper surface. The landfill has moderately steep slopes along its western, eastern, and southern sides, and a gentle slope along the northern side.

Fine, sandy soil of variable thickness covers most of the landfill, and vegetative cover is essentially nonexistent. Along the top of the northern and western slopes, incinerator residue is visible in

banks where wind and water action apparently removed the sand cover. A drainage bounds the southern and western sides of the landfill, channeling surface water runoff into a wetland area situated immediately to the north-northwest of the landfill. The wetland area generally extends from the northwest corner of the landfill area, along both sides of the B&M Railroad, to a point approximately 500 feet south of Breakfast Hill Road, The margins of the wetlands adjacent to the landfill have been partially filled with rock removed from the quarry and some native sand and gravel. Wetlands west of the railroad track drain both the north and the south. The landfill is located on a subregional drainage divide and contributes runoff in a generally radial pattern into the watersheds of four nearby streams west of the Site: Little River, Berry's Brook, North Brook, and Bailey Brook (Appendix A, Figure 2).

Natural resources in the area include the agricultural lands, woodlands, and wetlands which surround the Site. Surface water bodies feed the wetland area. The groundwater is available in aquifers formed by water saturated portions of sand and gravel deposits and in fractured bedrock. Sand and gravel deposits are found throughout the Site. Some bedrock outcrops were mined for crushed aggregate in a quarry operation. It is reasonable to expect that wetland and stream areas receive some hunting and fishing activity. This is considered minor recreational use. There is also occasional use of all-terrain recreational vehicles on and around the Site.

APPENDIX D

List of Settling Defendants

CITY OF PORTSMOUTH, NEW HAMPSHIRE
TOWN OF NORTH HAMPTON, NEW HAMPSHIRE
TOWN OF NEWINGTON, NEW HAMPSHIRE
BOOTH FISHERIES CORPORATION
BROWNING-FERRIS INDUSTRIES OF NEW HAMPSHIRE, INC.
CUSTOM POOLS, INC.
ERIE SCIENTIFIC COMPANY
GARY W. BLAKE, INC.
GEORGE FRISBEE
GTE PRODUCTS CORPORATION
GYPSUM HAULAGE, INC.
JET-LINE SERVICES, INC.
K.J. QUINN & CO., INC.
K MART CORPORATION
MOBIL OIL CORPORATION
MONTGOMERY WARD & CO., INCORPORATED
NEW ENGLAND TELEPHONE AND TELEGRAPH COMPANY
NEWINGTON MIDAS MUFFLER
NORTHERN UTILITIES, INC.
PIKE ASSOCIATES, INC.
POST MACHINERY COMPANY, INC.
PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE
R.M. PHILBRICK TRUCKING CO., INC.
S & H PRECISION MFG. CO., INC.
SAEF LINCOLN MERCURY, INC.
SANEL AUTO PARTS, INC.
SEACOAST VOLKSWAGEN, INC.
SIMPLEX WIRE & CABLE COMPANY
UNITED TECHNOLOGIES CORPORATION
WASTE MANAGEMENT OF MAINE, INC.
WASTE MANAGEMENT OF NEW HAMPSHIRE, INC.