ADMINISTRATIVE ORDER EPA DOCKET NO. CERCLA I-~~90-1074~~

APPENDIX I

STATEMENT OF WORK

SOUTH MUNICIPAL WATER SUPPLY WELL

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A. PURPOSE OF THE SOW

This Statement of Work (SOW) defines the activities the Respondents shall perform under the terms of the Administrative Order, EPA Docket No. CERCLA I-90-1074 (the Order) in order to complete the remedial response at the South Municipal Water Supply Well Site as defined in the United States Environmental Protection Agency (EPA) Record of Decision (ROD) signed by the Acting Regional Administrator, Region I, on September 27, 1989. Sections C, D and E of this Appendix describe the remedies for soil, groundwater and sediments, respectively. Sections F, G and H of this Appendix set forth the requirements and procedures that the Respondents shall follow during the Remedial Design, Remedial Action and Operation and Maintenance phases of the work.

B. DEFINITIONS

The definitions provided in the Order are incorporated herein by reference. In addition, the following definitions shall apply:

a. "Dilute Plume Area" shall mean the contaminated groundwater plume down gradient from the NHBB Plume Area extending approximately from midway between EMTEK test wells, GZ-105 and EM-2 to EMTEK test well EM-109, as shown on the map in Appendix I.

b. "Hydrologic barrier" shall mean an 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.

c. "NHBB Plume Area" shall mean the contaminated groundwater plume extending from EMTEK test wells GZ-101, GZ-8 and GZ-103, beneath the NHBB building to a point approximately midway between EMTEK test wells GZ-105 and EM-2 as shown on the map in Appendix I.

d. "Unsaturated soils" shall mean soils between the ground surface and the top of the water table (vadose zone) during the period of the Work.

C. REMEDY FOR CONTAMINATED SOILS

For soils contaminated with hazardous substances at concentrations above Cleanup Standards, the Respondents shall implement remedial actions that include in-situ vacuum extraction to reduce concentrations of such hazardous substances in the soils to levels at or below the specified Cleanup Standards.

1. Cleanup Standards for Soils

The soil Cleanup Standard for unsaturated soils are listed below.

Contaminant	Cleanup Standard (ppb)
Tetrachloroethylene	4.5
1,1,1-Trichloroethane	76
Trichloroethylene	1.5
1,1-Dichloroethylene	1.1
Toluene	1500
1,1-Dichloroethane	60
Vinyl Chloride	0.28

The Respondents shall achieve the cleanup standards in all soil unless the Respondents can demonstrate to the satisfaction of EPA that a contaminant level in soil has been achieved that is not contributing to groundwater contamination above Cleanup Standards established for groundwater, is protective for all other exposure scenarios, and satisfies all other evaluation criteria used in selecting this element of the remedy.

This remedy shall include continued evaluation of the effectiveness of vacuum extraction in achieving the cleanup standards. Additional remedial actions and alternative remedial measures shall be investigated and utilized by the Respondents if EPA determines upon the basis of its evaluation that the remedy described herein is not protective of public health and the environment.

2. Technology for Treating Contaminated Soils

Where unsaturated soils are contaminated above Cleanup Standards, the Respondents shall design and implement an in-situ vapor vacuum excavation system in order to achieve the soil Cleanup Standards in all unsaturated soils within two (2) years. The system will consist of:

a. Extraction wells in the unsaturated soils.
b. Vacuum pump(s).
c. Vapor/liquid separator.
d. Activated carbon adsorption for treatment of the soil vapors before discharge to the atmosphere.
e. Monitoring wells to monitor residual contaminant concentrations in the soils.

3. Performance Standards for Contaminated Soils

In designing, constructing, operating, maintaining, and monitoring the remedial technology for soils, the Respondents shall comply with all statutes and regulations identified in Appendix B to the ROD and all requirements identified pursuant to Section F.2.a.(4)(a) of this SOW.

The Respondents shall design, construct, operate, and maintain the vacuum extraction and vapor treatment systems, which will be handling hazardous wastes, in accordance with New Hampshire hazardous waste requirements, N.H. Admin. Code He-P 1905, including, but not limited to, requirements relating to standards for generators, security, inspection and training, tank systems, use and management of containers, miscellaneous treatment units (carbon columns), and packaging, labelling, manifesting and transportation.

The Respondents shall also comply with 40 C.F.R. Parts 264 and 268, 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.

D. REMEDY FOR CONTAMINATED GROUNDWATER

For groundwater contaminated with hazardous substances above the Cleanup Standards, the Respondents shall implement remedial actions to restore the groundwater to the Cleanup Standards, which include extraction, treatment, and recharge/discharge of groundwater (collectively the "groundwater treatment system"), and shall continue to operate and maintain the groundwater treatment system until the Cleanup Standards are achieved and sustained.

1. Cleanup Standards for Groundwater

The following Cleanup Standards for groundwater shall be attained in all groundwater at the Site.

Contaminant	Cleanup Standard (ppb)
Tetrachloroethylene	5
1,1,1-Trichloroethane	200
Trichloroethylene	5
1,1-Dichloroethylene	7
Toluene	2000
1,1-Dichloroethane	810
Vinyl Chloride	2

At the conclusion of the groundwater remediation, concentrations of each groundwater contaminant listed above shall be at or below its cleanup standard.

2. Technology for Restoring Groundwater

In the areas where groundwater is contaminated above Cleanup Standards, the Respondents shall design and implement remedial actions to extract groundwater from the NHBB Plume Area and the Dilute Plume Area. The extracted water shall be treated on-site with air stripping to reduce contaminant levels to drinking water quality and New Hampshire groundwater discharge standards listed below. Air from the stripping towers will be treated with carbon columns prior to emission into ambient air. The treated water shall be discharged to groundwater on-site.

The Respondents shall design, construct, operate and maintain the groundwater treatment system to achieve the Cleanup Standards in accordance with the following.

a. Groundwater Cleanup Standards shall be attained in the Dilute Plume Area (GZ) in 7.5 years. Groundwater shall be extracted from the Dilute Plume Area at the rate of approximately 400 gallons per minute (gpm). The Dilute Plume Area extraction wells shall be placed to withdraw groundwater that has migrated from the NHBB Plume Area and is contaminated above Cleanup Standards.

b. Groundwater Cleanup Standards shall be attained in the NHBB Plume Area well in 19 to 32 years. Groundwater shall be extracted from the NHBB Plume Area at the rate of approximately 200 gallons per minute (gpm). The NHBB Plume Area groundwater Extraction Systems shall consist of extraction wells located in the vicinity of the northeast corner of the NHBB building.

c. The groundwater extraction will be designed to create a hydrologic barrier between the NHBB Plume Area and the Dilute Plume Area to prevent the migration of contaminants away from the NHBB Plume Area, to permit the use of groundwater in the Dilute Plume Area of the aquifer after attaining Cleanup Standards, while continuing the pump and treat remedy of the contaminated groundwater in the NHBB Plume Area.

d. The groundwater Extraction Systems for the Dilute Plume Area will be designed so as to provide a hydrologic barrier between groundwater in the Dilute Plume Area and the South Municipal Well.

e. The groundwater treatment system will consist of stripping towers, holding tanks, and transfer pumps to cycle contaminated water through the treatment system. Groundwater from the NHBB Plume Area shall pass through a phase separation settlement tank/pretreatment system (System) to separate dense non-aqueous phase liquids (DNAPLS) from the solution prior to air stripping. DNAPLS in the system shall be drained off periodically for recycling or disposal. The air stripping towers will include carbon columns to treat all air prior to emission into ambient air.

f. The groundwater treatment system shall be designed and operated so effluent discharged from the system meet the Cleanup Standards and all New Hampshire groundwater discharge limits. The treatment system shall include monitoring to ensure the effluent meets the designed treatment standards approved by EPA pursuant to this SOW.

g. The treated water shall be discharged to groundwater on-site. Treated effluent shall be pumped to an infiltration trench located upgradient of the NHBB Plume Area extraction well that is designed to enhance contaminant removal. Respondents shall design, construct and maintain an additional infiltration trench between the Dilute Plume Area and the South Well if EPA determines that the additional trench is necessary to provide a positive hydrologic barrier between the Dilute Plume Area and the South Well.

EPA may agree to adjust the number and configuration of extraction wells in order to achieve the Cleanup Standards in the time periods specified if the Respondents presents data that show Cleanup Standards can be achieved in the specified time period at a different rate of groundwater extraction.

3. Performance Standards for Contaminated Groundwater

The Respondents shall design, construct, operate and maintain the groundwater treatment system in compliance with all statutes and regulations identified in Appendix B to the ROD and all requirements identified pursuant to Section F.2.a.(4)(a) of this SOW.

The groundwater treatment system, which will be handling hazardous wastes, shall be designed, constructed, operated and maintained in accordance with New Hampshire hazardous waste requirements, N.H. Admin. Code He-P 1905, including, but not limited to, requirements relating to standards for generators, security, inspection and training, tank systems, use and management of containers, miscellaneous treatment units (carbon columns), and packaging, labelling, manifesting and transportation.

The Respondents shall also comply with 40 C.F.R. Parts 264 and 268, 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.

Contaminated groundwater passed through the System or which is extracted from the Dilute Plume Area shall be treated by one or more air stripping systems meeting the requirements of New

Hampshire groundwater discharge limits pursuant to RSA:8,III and New Hampshire Administrative Code Ch. Ws 410.

Any discharge of treated groundwater to groundwater at the site shall meet the substantive requirements of the New Hampshire groundwater discharge limits 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 and be in compliance with the National Pollutant Discharge Elimination System, 40 C.F.R. Part 125, and New Hampshire Administrative Code Ch. Ws 400 and Ws 430, Parts 437 and 439, 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.

Respondents may request that EPA approve a plan to cease extraction and treatment of the Dilute Plume Area when two consecutive quarterly groundwater samplings provide data showing groundwater Cleanup Standards have been achieved. Pending agreement by EPA to cease extraction and treatment of groundwater from any portion of the groundwater, Respondents shall continue to operate and maintain the groundwater treatment system as approved by EPA under this SOW. The groundwater extraction and treatment equipment shall remain in place until the Respondents can demonstrate through the groundwater monitoring program that the Cleanup Standard have been met for a period of three consecutive years after cessation of remediation, in accordance with the procedures in 40 C.F.R. 264.100(d) and (f).

E. REMEDY FOR SEDIMENTS

For sediments contaminated with Hazardous Substances at concentrations above Cleanup Standards, the Respondents shall implement remedial actions that include dredging or excavating those sediments, dewatering, packaging and transporting the contaminated materials to an off-site landfill operating in compliance with RCRA, TSCA and other applicable laws and regulations.

1. Cleanup Standards for Sediments

The Cleanup Standards for hazardous substances in sediments are 1 ppm total PCBs and 1.1 ppm total PAHs.

2. Performance Standards for Contaminated Sediments

In areas where sediments are contaminated above Cleanup Standards, the Respondents shall design and implement remedial actions to remove sediments from the wetlands contaminated with PCBs at levels greater than 1 ppm or with PAHs at levels greater than 1.1 ppm. The Respondents shall design, construct, operate and maintain the wetlands remediation in compliance with all statutes and regulations identified in Appendix B to the ROD and all requirements identified pursuant to Section F.2.a.(4)(a) of

this SOW.

The excavated sediments will be dewatered (if necessary), placed in containers, and transported off-site for disposal at a disposal facility which is operating in compliance with appropriate RCRA and/or TSCA requirements, in accordance with Section 121(d)(3) of CERCLA. Prior to any off-site shipment of such materials from the Site, the Respondents shall notify EPA in writing of the off-site disposal facility to which Respondents proposes to ship the materials. EPA approval of the disposal facility is required prior to transport.

To the extent that dewatering is necessary, and relative to dewatering and treatment of contaminated sediment and surface drainage from controlled work areas and sediment dewatering activities, the Respondents shall meet the substantive requirements of the Clean Water Act, 33 U.S.C. §§ 1251 et seq., under the National Ambient Water Quality Criteria promulgated pursuant to Section 307 (a) of the CWA and the National Pollutant Discharge Elimination System, 40 C.F.R. Part 125, and New Hampshire Administration Code Ch. Ws 400 and Ws 430, Parts 437 and 439, 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.

In conducting the excavation and/or dredging of contaminated sediments, the Respondents 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.

All activities by the Respondents involving the wetlands shall be conducted in a manner consistent with Executive Order 11990 and 40 CFR Part 6, Appendix A. Any activities in the wetlands that involve the discharge of dredged or fill materials shall be conducted in a manner utilizing the alternative which would have the least adverse impact on the aquatic ecosystem and the environment, pursuant to 40 CFR § 230.10(a).

In performing the excavation and/or dredging, Respondents shall meet the following requirements:

a. All work shall be performed during low water periods to minimize the need for dredging and shall be designed to minimize the potential migration of contaminants to other portions of the wetlands.

b. Controls including, but not limited to, coffer dams, silt curtains, and/or hay bales, shall be used to isolate the contaminated wetlands and to minimize resuspension and downstream transport of the contaminated sediments.

c. During excavation, surface water and sediment monitoring will be conducted in the area of excavation

and downstream to determine whether contaminant transport is occurring.

Following the completion of the sediment excavation, the Respondents shall restore the wetland areas affected by the remediation to their original state, to the maximum extent practicable. Pre-remediation conditions shall be thoroughly assessed prior to disturbance. The Respondents shall identify those factors that are essential to successful restoration. Factors may include, but not necessarily be limited to, replacing and regrading hydric soils, controlling surface water and groundwater flow, and re-establishing vegetation through transplanting, seeding or a combination of both.

a. Remedial actions shall include replacing excavated sediments with suitable materials and regrading to achieve pre-remediation ground elevations and drainage patterns.

b. The wetlands will be revegetated with appropriate wetland plants in order to minimize erosion and to provide habitat for indigenous wildlife through a program of transplanting, seeding or some combination thereof.

c. Monitoring of the wetlands restoration shall be conducted at two year intervals until the condition of the affected wetland prior to this remedial action has been met to within plus or minus ten (10) percent as measured by comparing the percentages of pre- and post-remediation herbaceous and woody cover in the affected wetlands.

d. The wetland restoration will be reimplemented if subsequent monitoring determines that the wetlands restoration program has not achieved its goals.

F. REMEDIAL DESIGN

The remedial design process shall consist of initial remedial steps, a pre-design phase, and a remedial design phase. The Respondents shall prepare separate work plans for the pre-design and remedial design phases and shall submit them to EPA for review and approval.

1. Initial Remedial Steps

a. Within ten (10) days of the effective date of this Order, the Respondents shall submit to EPA the names and qualifications of the contractors from whom Respondents will solicit proposals to perform the remedial design tasks set forth in this SOW, in accordance with Paragraph 55 of the Adminstrative Order. EPA may disapprove any or all of the selected contractors. The failure of EPA to disapprove any proposed contractor shall not preclude EPA from disapproving the selected

contractor.

b. Within ten (10) days after Respondents submit the list of proposed contractors, pursuant to Section F.1.a. above, the Respondents shall submit to EPA a Letter of Acceptance from the selected contractor(s), copies of the signed contract(s), and final bid packages of the short list of bidders for such contracts.

2. Pre-Design Work Plan

a. Within sixty (60) days of the effective date of this Order, the Respondents shall submit a Pre-Design Work Plan to EPA for review and approval. The Pre-Design Work Plan shall specify and describe all tasks and investigations to be undertaken to facilitate the remedial design and to ensure the effectiveness of the remedy. The Pre-Design Work Plan shall include at a minimum:

(1) A Project Operations Plan (detailed in Attachment 1 to this SOW) prepared in support of all field work to include:

(a) A site-specific health and safety plan including a Contingency Plan in compliance with 40 CFR §264 Subpart D and He-P 1905.08(d)(4)i;

(b) A quality assurance/quality control plan, as required by Section XV of the Order;

(c) A field sampling and analysis plan; and

(d) A site security plan to provide for the safety of personnel and equipment and to protect against unauthorized access. The necessity for fencing and 24-hour security services shall be addressed.

(2) A detailed description of the investigations necessary for the design and implementation of each of the above specified remedial actions. This description shall include for each investigation a statement of purpose and objectives, identification of the specific activities necessary to complete the investigation and a schedule for performance of the activities, including submission of deliverables. This description shall encompass, at a minimum, the investigations specified below:

(a) Soil studies to determine the lateral extent of the VOC-contaminated soils in the two areas identified in the ROD; and a pilot study to determine flow rates, system effectiveness, and the most efficient number and configuration of vacuum extraction wells for the design of the full-scale vacuum extraction system;

(b) An analysis the groundwater treatment and extraction system to determine the final location, number and size of treatment facilities and of extraction wells. Key to the analysis will be the obtaining of site specific, representative

values of parameters essential to determining the extraction rates and associated treatment plant capacities in order to meet the remediation cleanup times specified in the ROD, to attain the effluent treatment Performance Standards, and to ensure hydraulic separation of the dilute plume from the NHBB plume and from the South Municipal Well. These parameters include, but are not necessarily limited to: porosity, permeability and organic carbon content of the aquifer materials. As part of this analysis, the viability of upgrading the existing volatile organics treatment system to RCRA standards for treatment, storage and disposal facilities must be evaluated. Also, the need for, effectiveness of, and impact on treatment facility size of cyclic pumping and/or other techniques to enhance extraction of dense non-aqueous phase liquids (DNAPLs) must be determined;

(c) Sediment sampling for PCBs and PAHs to delineate the lateral and vertical extent of the sediments needing remediation. In association with this effort would be a detailed assessment of the pre-remediation condition of the wetland areas likely to be disturbed by the sediment remediation.

(3) A preliminary plan for designing and implementing groundwater, soil, wetlands, and air monitoring programs. Consideration shall be given to monitoring for process efficiencies as well as for ambient conditions in the air and groundwater.

(a) A groundwater monitoring program shall be developed for the following purposes:

- to monitor contaminant concentrations throughout the affected aquifer over time;

- to evaluate the effectiveness of the remedial action and attainment of the groundwater Cleanup Standards; 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 aspects:

Performance monitoring - which will be implemented consistent with 40 C.F.R. § 264.100(d) and He-P 1905.08(d)(4)j, requiring implementation of a monitoring program to assess the effectiveness of a corrective action program. Treatment plant effluent shall be sampled no less often than monthly for VOCs using EPA Method 524.2 for the analysis in order to ensure compliance with State groundwater discharge requirements.
Additional monitoring wells - the need for two or more well couplets to bracket the apparent end of the dilute plume shall be investigated. An "early warning" well couplet located between the dilute plume and the South Municipal Well shall be installed.

Groundwater monitoring - any newly installed wells and selected existing wells shall be sampled on a quarterly basis beginning within thirty (30) days of EPA approval of the Pre-Design Work Plan. Quarterly sampling shall continue for at least the first two years of full-scale operation of the groundwater extraction and treatment. Subsequently, an appropriate sampling frequency, no less often than annually, shall be determined after review of the results. VOC analyses shall be done for all samples using EPA Method 624, until such time that EPA determines that EPA Method 524.2 is appropriate to determine compliance with MCLs. Specific analysis parameters may be added or deleted depending on sampling results and observed trends. Water levels shall be taken twice a year during the Spring and Fall.

(b) The air monitoring program shall include, but not necessarily be limited to, the following aspects:

Performance monitoring - emissions sampling shall be done on a monthly basis at the outlets of the carbon columns for the stripping towers and the vacuum extraction system during the life of their operation. Soil gas monitoring wells shall be installed to determine the effectiveness of the vacuum extraction system as it operates to enable operational adjustments to be made as needed. Sampling frequency, techniques and well locations shall be described in the Field Sampling and Analysis Plan.

Ambient sampling - air quality sampling stations shall be permanently installed and maintained if review of the emissions data indicates the need.

(c) The soil monitoring program shall include, but not necessarily be limited to, the following aspects:

Performance monitoring - soil samples from locations within the areas being remediated shall be analyzed periodically to assess the effectiveness of the vacuum extraction system and to provide a quantitative check on the soil gas monitoring described above.

(d) The wetlands monitoring program shall include, but not necessarily be limited to the following aspects:

Pre-Remediation assessment - A complete inventory of the indigenous flora and fauna shall be made and a biological sampling program shall be proposed.
Performance monitoring - a program to monitor surface drainage and water from dewatering activities shall be proposed to determine if any release of contaminants is occurring to other portions of the wetlands. Sediment sampling to ensure compliance with Cleanup Standards will be done prior to replacement of materials.

Ambient monitoring - Monitoring of the wetlands restoration

shall be conducted at two year intervals until the condition of the affected wetland prior to this remedial action has been met to within plus or minus ten (10) percent as measured by comparing the percentages of pre- and post-remediation herbaceous and woody cover in the affected wetlands.

All monitoring data will be reviewed and evaluated during the implementation of the remedial action to ensure that response objectives are achieved.

(4) A detailed statement of all Performance Standards, applicable or relevant and appropriate federal and state public health and environmental requirements and standards as they relate to the specific circumstances at this Site, including, but not limited to, standards or requirements under the following:

(a) The Solid Waste Disposal Act, as amended, 42 U.S.C. §§ 6901 et seq., and regulations promulgated thereunder;

(b) Federal Clean Water Act;

(d) Federal Safe Drinking Water Act;

(e) Federal Executive Orders 11988 (Floodplains) and 11990 (Wetlands), and guidance outlined under 40 CFR Part 6, Appendix I; and

(f) New Hampshire Statutes He-P 1905, Ws 400, Ws 410, Ws 430.

b. Within seven (7) days after the Respondents receives approval of the Pre-Design Work Plan from EPA the Respondents shall commence implementation of the activities set forth therein in accordance with the schedule contained in the Work Plan.

c. Within sixty (60) days after receipt of approval of the Pre-Design Work Plan, the Respondents shall submit a Pre-Design Report for review and approval by EPA, after opportunity for review and comment by the State. The Pre-Design Report shall set forth in detail the results of the work performed under the approved Pre-Design Work Plan.

3. Remedial Design Work Plan

a. Within thirty (30) days after EPA approves the Pre-Design Report, the Respondents shall submit for review and approval by EPA a Remedial Design Work Plan which shall set forth all activities 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 following activities:

(1) Development of detailed design plans and specifications (including schedules of implementation) for the groundwater, soils, and sediments remedies;

(2) Submission of design plans for review and approval by EPA at four stages during their development 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;

(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 designs 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 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 E.3.a.(5), below.

(3) The provision 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 Report.

(4) A final Environmental Monitoring Plan which refines the preliminary plan (E.2.A.3.) provided with the Pre-Design Report.

(5) Development of an Operation and Maintenance Plan that shall ensure the long-term, continued effectiveness of the vacuum extraction system and the groundwater extraction and treatment system that 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;

(i) a cost estimate for Post-closure care; and

(j) establishment of a financial assurance mechanism for long-term operation and maintenance and Post-closure care.

b. Within seven (7) days after the Respondents receive approval from EPA of the Remedial Design Work Plan, the Respondents shall initiate performance of the activities set forth therein in accordance with the 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 fifteen (15) days after EPA approves the final (100%) design, the Respondents shall submit the names and qualifications of the contractors from whom the Respondents will solicit bids to perform the remedial action tasks set forth in this appendix (i.e. Respondents's short list of bidders). EPA may disapprove any or all of the proposed bidders. The failure of EPA to disapprove any bidder shall not preclude EPA from disapproving the selected contractor.

b. Within thirty (30) days after EPA receives the Respondents's short list of bidders, the Respondents shall notify EPA of the name of the selected contractor and shall submit to EPA a letter of acceptance from the contractor.

2. Remedial Action Work Plan

a. Within sixty (60) days after EPA receives the name of the remedial construction contractor, the Respondents shall submit for review and approval, by EPA a Remedial Action Work Plan for implementing the Site remedial actions and associated activities, including an Operation and Maintenance Plan for each component of the remedy consistent with the approved design for each Site area. 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) award of project contracts including agreement with off-site landfill;

(b) contractor mobilization/site preparation;

(c) construction and start-up of groundwater extraction and treatment facilities;

(d) construction and start-up of soil gas vacuum extraction and treatment facilities;

(e) excavation/dredging of contaminated sediments in wetland areas;

(f) restoration of disturbed wetland areas;

(g) performance monitoring of groundwater and demobilization of treatment facilities; and

(h) 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 Order.

b. Within fifteen (15) days after the Settling Defendant receives notice that EPA has approved the Remedial Action Work Plan, the Respondents shall initiate remedial activities in accordance with the Remedial Action Work Plan and schedules contained therein.

c. During the construction period, the Settling Defendant and the Respondents's contractor(s) shall meet monthly with EPA regarding progress and details of construction, unless EPA waives the meeting.

d. Within ten (10) days of completion of construction each component of the remedial action (e.g., the vacuum extraction

system, the groundwater extraction and treatment system, and the sediment excavation/dredging and wetlands restoration), the Respondents shall submit a final remedial construction report for each component of the remedy for approval by EPA.

H. OPERATION AND MAINTENANCE

Immediately after receipt of notice that EPA has approved the Respondents's final remedial construction report for a component of the remedy, the Respondents shall implement all operation and maintenance activities according to the terms and schedules set forth in the Operation and Maintenance Plan for such remedy component as approved by EPA.

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.)	10 days after effective date of Order
Remedial Design Contractor(s) (Section F.1.b.)	10 days after submission of Contractor List
Pre-Design Work Plan (Section F.2.a.)	60 days after effective date of Order
Pre-Design Work Plan Implementation (Section F.2.b.)	7 days after approval of Pre-Design Work Plan
Pre-Design Report (Section F.2.c.)	60 days after approval of Pre-Design Work Plan
Remedial Design Work Plan (Section F.3.)	30 days after approval of Pre-Design Report
Remedial Design Work Plan Implementation (Section F.3.b.)	7 days after approval of Remedial Design Work Plan

Task/Deliverable	Due Date
Remedial Action Contractor List (Section G.1.a.)	15 days after receipt of approval of final (100%) design plans
Submission of Letter of Acceptance from Remedial Action Contractor (Section G.1.b.)	30 days after submission of Remedial Action Contractor List
Remedial Action Work Plan (Section G.2.a.)	60 days after date of acceptance letter from Remedial Action Contractor
Remedial Action Implementation (Section G.2.b.)	15 days after approval of Remedial Action Work Plan
Remedial Construction Report (Section G.2.d.)	10 days after construction of Remedial Action

J. **REVIEW, APPROVAL, AND/OR AMENDMENT OF WORK PLANS, REPORTS AND WORK**

1. EPA shall review the plans, tasks or deliverables described above in Section I, as they are submitted by the Respondents pursuant to Section XIX of the Order. The Respondents shall initially provide fifteen (15) copies to EPA of all work plans listed in Section I. Three (3) copies of subsequent submissions of revised work plans and all other deliverables shall be made to EPA unless prior approval of a different number of copies has been given by EPA. To the extent practicable, all submissions should be printed on both sides of the paper and should be printed on recycled paper.

2. After review of any plan, report or other item which is required to be submitted for approval pursuant to this Order, EPA shall either: (1) approve the submission; (2) disapprove the submission, notifying Respondents of deficiencies; (3) disapprove the submission and develop its own plan, report, or other item; or (4) modify the submission to cure the deficiencies.

3. Upon receipt of a notice of disapproval with notice of deficiencies, Respondents shall, within twenty (20) days thereafter, correct the deficiencies and resubmit the plan, report, or other item for approval. Notwithstanding a notice of disapproval, Respondents shall proceed to take any action required by any non-deficient portion of the submission unless otherwise directed by EPA.

4. Upon approval, amendment or development by EPA, all plans, work plans, or reports required by this Order or this SOW shall be incorporated into the Order and shall be enforceable thereunder.

5. Modifications to this SOW may be made upon written approval of the Section Chief, New Hampshire Superfund Section, Waste Management Division of EPA Region I, pursuant to Paragraph 58 of the Order.

ATTACHMENT 1
PROJECT OPERATIONS PLAN

The purpose of this attachment is to outline the specific requirements of three aspects of the Project Operations Plan: the Health and Safety Plan, the Quality Assurance and Quality Control Plans and the Field Sampling and Analysis Plans.

A. SITE SPECIFIC HEALTH AND SAFETY PLAN

The Respondents shall prepare a Site Specific Health and Safety Plan (HSP) 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).

The Respondents' plan shall be adequate to assure the safety of the field team and the community during all activities conducted pursuant to the Order, 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 Respondents' 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 Respondents 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. Two separate QA/QC Plans shall be developed. The Respondents' first QA/QC Plan, the Construction QA/QC Plan 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 Respondents' second 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 Respondents shall prepare all QA/QC plans in accordance with EPA guidance document QAMS-005/80 and Data Quality Objectives guidance documents EPA/540/G-87/003 and 004 (March 1987). At a minimum the following topics shall be addressed in the QA/QC Plans:

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 Respondents shall develop a Field Sampling and Analysis Plan that indicates the procedures to be followed for all samples to be taken pursuant to the Order, this SOW and the Remedial Design Work Plan. The Respondents' 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.