UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I - HBO
J.F. KENNEDY FEDERAL BUILDING, BOSTON, MA 02203-2211

MEMORANDUM

DATE: September 30, 1998

SUBJ: Request for a 12 Month and $2 Million Exemption for a Non-Time Critical Removal Action at the Beede Waste Oil Superfund Site, Plaistow, New Hampshire - ACTION MEMORANDUM

FROM: Jim DiLorenzo, RPM

THRU: Larry Brill, Chief
R & RI Branch

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

I. PURPOSE

Authorization is hereby requested for $2,458,016 to initiate a Non Time-Critical Removal Action (NTCRA) to address the threat posed by sub-surface plumes of Light Non-Aqueous Phase Liquid (LNAPL) at the Beede Waste Oil Superfund Site in Plaistow, New Hampshire. This removal action is necessary to prevent, minimize, and mitigate potential damage to the public health or welfare, or the environment posed by a release of hazardous substances to the environment. This Action Memorandum documents approval for a 12 month and $2 million exemption for the Beede Site.

This removal action is designated as a NTCRA because more than six months planning time is available before on-Site activities must be intitiated.

II. SITE CONDITIONS AND BACKGROUND

CERCLIS ID#: NHD018958140
SITE ID#: 011T
CATEGORY: Non Time-Critical Removal

The Beede Waste Oil Superfund Site (Site) was placed on the National Priorities List (NPL) on December 23, 1996. A Remedial Investigation is well underway and is being performed as a State Lead project. The United States Environmental Protection Agency (EPA) and the New Hampshire Department of Environmental Services (DES) performed time-critical removal actions from July 1996 to August 1997, which resulted in the removal of about 100 above-ground storage tanks and over 800 drums.

Three LNAPL plumes are present beneath the Beede Site. The *former lagoon plume* encompasses an area of approximately 0.87 acres, has an estimated volume of 14,300 gallons of mobile LNAPL and an estimated thickness[1] of 0.56 feet. The *Surface Water Runoff Pit (SWRP) No. 1 Plume* encompasses an area of approximately 0.30 acres, has an estimated volume of 2,000 gallons of mobile LNAPL and an estimated thickness of 0.11 feet. The *Underground Storage Tank (UST)/Above Ground Storage Tank (AST)/SWRP No. 2 Plume* encompasses an area of approximately 1.42 acres, has an estimated volume of 26,700 gallons of mobile LNAPL and an estimated thickness of 0.65 feet. The three plumes differ in color, texture and other physical characteristics but all contain hazardous constituents including volatile-organic compounds (VOCs), petroleum hydrocarbons (PHCs) and poly-chlorinated biphenyls (PCBs). LNAPL samples were not analyzed for metals, pesticides or semi-VOCs.

A. SITE DESCRIPTION

1. Background

The Beede Waste Oil Site is located at 7 Kelley Road in Plaistow, New Hampshire, encompassing several parcels of land totaling 39 acres (see attached Figure 1). The work proposed in this memorandum will be performed primarily on a parcel (22 acres) designated as Lots 1 and 12, Block 3 on the Plaistow Tax Map page 32.

Commercial operations, including recycling of used oil, and storage and distribution of virgin fuel oil reportedly started in 1926 and continued until August, 1994. The abutting properties are primarily residential, and rely on private wells for their water supply. Kelley Brook, a tributary of the Merrimack River, runs through a portion of the site.

Currently located on Site are two buildings: a newer 10,000 square foot (ft^2) commercial building, formerly used for office space and vehicle maintenance with an attached 4,000 ft^2 canopied drum storage area, and a single-family residential home on the northern edge of the property, which is currently rented. An older dilapidated 6,000 ft^2 commercial building, which was used for antifreeze recycling, vehicle maintenance and office and storage space, was demolished by EPA in March, 1998, to allow characterization of the subsurface landfill.

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[1]The estimated thickness was calculated from several wells within the plume area based on observed well-head thickness and soil and product characteristics (i.e., porosity and density). Observed well-head thickness typically ranged from several inches to six feet.

In October, 1983, chemical contamination was discovered in a residential well near the site. The well was taken out of service and an alternate water supply (bedrock well) was provided. Since then, the Site owner and the New Hampshire Department of Environmental Services (DES) have performed a series of subsurface investigations which verify the presence of LNAPL plumes and contaminated groundwater. Initial mitigative measures taken included removal of a leaking underground oil tank, installation and operation of an oil recovery well, and installation of water treatment systems for a well which provides water to a condominium complex and a well which jointly supplies a home and small insurance business.

In February, 1992, seepage of LNAPL into adjacent Kelley Brook was discovered. DES has continued to contain the discharge using booms and sorbent pads. In 1996, EPA considered using the Oil Spill Liability Trust Fund to install a recovery system which would mitigate the discharge, however, samples collected from monitoring wells were found to contain PCBs at concentrations above 50 ppm. EPA instead proposed a separate non-time critical CERCLA removal action, which is the subject of this Action Memorandum.

In July 1996, EPA and DES jointly initiated a time-critical removal action to remove the approximately 100 above-ground storage tanks and 800 drums of abandoned waste oil containing varying levels of PCBs and RCRA wastes. A full description of this action is contained in Section B below.

2. Removal Site Evaluation

A potential LNAPL problem at the Beede Site was first discovered in June, 1991, when the Site owners removed a 140,000 gallon underground storage tank (UST). Oil-soaked soils were observed and triggered the removal of about 50 cubic yards from the excavation, which were stockpiled on-site. Waste oil seepage into Kelley Brook was first observed in 1992, verifying the presence of an LNAPL plume originating from the UST. During subsequent DES investigations, it became apparent that several LNAPL plumes were present beneath the Site.

An Approval Memorandum, attached in Appendix 1, was prepared in August, 1996, which called for preparation of an Engineering Evaluation/Cost Analysis (EE/CA) to fully characterize the nature and extent of LNAPL plumes and evaluate removal options. EPA's consultant, Tetra Tech NUS (formerly Brown & Root), performed initial measurements and sampling of the LNAPL in December ,1996. Tetra Tech performed a more extensive evaluation in October to December, 1997, as part of a treatability study conducted in support of the EE/CA. The results of the sampling and characterization concluded:

- The LNAPL consists mainly of PHCs characterized as No. 2 fuel oil/diesel, gasoline, kerosene, and lubricating oil;
- The LNAPL contains a smaller fraction of chlorinated and aromatic VOCs, PCBs, metals and pesticides;
- Density analysis indicates that all samples are lighter than water;
- Viscosities range from 4.09 to 130.4 centiStokes.

Complete results of laboratory analysis from product samples are summarized in attached Tables 1 and 2.

Several previous Site owner and DES investigations had verified the presence of multiple LNAPL plumes beneath the Beede Site. During performance of the EE/CA, it was deemed necessary to perform additional investigations to determine the full lateral extent, thickness and volume of mobile LNAPL present and determine the exact number of plumes. The investigations verified the presence of three LNAPL plumes: the *Former Lagoon Plume*; the *SWRP No. 1 Plume*; and the *UST/AST/SWRP No. 2 Plume*. The plumes are delineated on attached Figure 1. A description of each of the plumes follows.

Former Lagoon Plume

This LNAPL plume originates from a former waste oil lagoon located to the east of the newer building. The plume is approximately 250 feet long, 180 feet wide and occupies an area of approximately 0.87 acres. The maximum estimated thickness of the plume is 0.56 feet and the estimated volume of mobile LNAPL is 14,300 gallons. The LNAPL collected from monitoring wells SH-5, SH-7, and AE-11s in the former lagoon area is characterized as largely (71 to 86 percent) lubricating oil, with lesser to minor amounts (8 to 20 percent) of gasoline and light fuel oil. VOCs in the LNAPL consist of aromatic VOCs (AVOCs), chlorinated VOCs (CVOCs), and volatile PHCs (VPHCs). PCBs were also detected in all three LNAPL samples at concentrations ranging from 11 mg/kg to 37 mg/kg. The density of the samples ranged from 0.86 to 0.88 g/mL. The viscosity ranged from 121.4 to 130.4 centiStokes. Samples from this plume were not analyzed for metals, pesticides, or SVOCs.

SWRP No. 1 Plume

This LNAPL plume originates from a man-made run-off pit located adjacent to Kelley Road near the Site entrance. The plume in this area is approximately 160 feet long, up

to 110 feet wide and occupies an area of approximately 0.30 acres. The maximum estimated thickness of the plume is 0.11 feet and the estimated volume of mobile LNAPL is 2,000 gallons. The LNAPL collected from monitoring well AE-4 is described as kerosene (greater than 90 percent) and in well AE-3, as kerosene and weathered fuel oil No. 2/diesel. The LNAPL samples analyzed for VOCs indicated a moderate concentration of AVOCs, no CVOCs, and a high concentration of VPHCs. Total PCBs concentrations of 21 mg/kg and 46 mg/kg were detected in samples from AE-3 and AE-4. Metals detected in AE-3 included arsenic, chromium, lead, and selenium. SVOCs detected in AE-3 included several PAHs and bis(2-ethylhexyl) phthalate. The density of LNAPL in monitoring well AE-3 was 0.83 g/mL. LNAPL from AE-4 was not analyzed for density due to insufficient volume. LNAPL collected from BR-18 contained primarily diesel range TPH and had a viscosity of 4.09 centiStokes. The LNAPL was observed to be a clear, light brown fluid.

Evaluation of analytical results indicates that the plume may merge with the UST/AST plume in the vicinity of BR-27. The viscosity (23.8 centiStokes) and TPH analysis of LNAPL at this well appear to be approximately the average of the viscosity and TPH determined for well BR-18 in the SWRP No. 1 plume and BR-E02 in the UST/AST plume.

UST/AST/SWRP No. 2 Plume

Observations made during the EE/CA field investigation indicate that SWRP No. 2, a man-made run-off pit in the middle of the property, is a less-significant LNAPL source than initially believed. It appears that the UST/AST and SWRP No. 2 plumes are one large LNAPL plume originating primarily from the former UST and ASTs. However, the composition of LNAPL in different areas of the plume varies, possibly because different types of product were stored in (and released from) the UST and ASTs at different times during the facility's operation. Additionally, the characteristics of the plume may have changed over time, as the LNAPL migrated, due to chemical or biological processes.

The combined mobile LNAPL plume is estimated to be approximately 320 feet long, up to 210 feet wide and occupies an area of approximately 1.42 acres. The downgradient extent of the plume is delineated by an observed LNAPL seep location in the wetlands adjacent to Kelley Brook (SW-2). The maximum estimated thickness of the plume is 0.65 feet and the estimated volume of mobile LNAPL is 26,700 gallons.

Two locations were identified within the UST/AST/SWRP No. 2 plume where little or no mobile LNAPL was present, despite the presence of a significant amount of

LNAPL in nearby wells. The lack of LNAPL may be explained by the presence of landfill materials or other low conductivity materials in or upgradient of these locations that are obstructing and diverting flow around these areas.

The LNAPL collected from wells AE-8, AE-9, and AE-16 in the northwest portion of the plume is characterized as primarily (55 to 59 percent) lubricating oil with some (33 to 39 percent) fuel oil No. 2/diesel and possible minor amounts of weathered gasoline. The TPH analysis from BR-E02 is consistent with this characterization (principally motor oil-range TPH, with some diesel-range, and little gasoline-range TPH). The density analysis of the LNAPL ranges between 0.88 and 0.94 g/mL and the viscosity of the LNAPL samples were 49 centiStokes (AE-9) and 54.3 centiStokes (BR-E02). Samples collected from wells AE-8 and AE-9 contained AVOCs, CVOCs, VPHCs, and PCBs. Total PCBs concentrations ranged from 32 mg/kg to 67 mg/kg. Metals detected in LNAPL samples from AE-9 and AE-16 were arsenic, beryllium (AE-16 only), chromium, lead, and zinc (AE-9 only). SVOCs detected in AE-9 included several PAHs and bis(2-ethylhexyl) phthalate. Pesticides alpha BHC, beta BHC, and dieldrin, were detected at low concentrations (less than 0.2 mg/kg) in AE-16. The LNAPL in wells in the area of AE-8 and AE-9 was observed to be an emulsified mixture that separated into two distinct layers and, in some cases, a third layer of a light green liquid (similar to ethylene glycol).

The LNAPL collected from monitoring wells SH-6 and SH-10 downgradient of SWRP No. 2 is characterized as lubricating oil, kerosene, and possibly lesser fuel oil No. 2/diesel and minor weathered gasoline. The sample from SH-6 contained more lubricating oil (64 percent) than kerosene (27 percent); the sample from SH-10 contained somewhat more kerosene (50 percent) than lubricating oil (42 percent). The TPH analysis from BR-22 is consistent with this characterization (principally motor oil-range TPH, with some diesel-range, and little gasoline-range TPH). The density of the LNAPL was determined to be 0.87 g/mL in SH-6 and 0.85 g/mL in SH-10. The viscosity of the LNAPL sample was 19.4 centiStokes in SH-10 and 43.3 centiStokes in BR-22. The LNAPL samples analyzed for VOCs indicated a high concentration of AVOCs, moderate concentrations of CVOCs, and a high concentration of VPHCs. Total PCB concentrations exceeding the TSCA waste criterion of 50 mg/kg were detected in LNAPL samples from both monitoring wells. LNAPL samples from this plume were not analyzed for metals, pesticides, or SVOCs. The LNAPL in wells SH-6 and SH-10 was similar in appearance: clear, golden product similar to clean motor oil.

The product collected in the LNAPL recovery trench, at the downgradient limit of the plume, had a higher viscosity (107 centiStokes), a somewhat different chemical characteristics (higher concentration of lubricating oil/motor oil, with very little diesel

or gasoline range TPH), and a different appearance than LNAPL observed in other areas of the plume. The LNAPL is a dark brown/black, dirty oil, similar in composition, viscosity, and appearance, to that observed in the former lagoon plume, indicating that the this portion of the plume (the leading edge) may have been released from the UST during the same time period that the former lagoon was in use (1962-1970).

LNAPL Plume Summary

Collectively, the three LNAPL plumes cover an areal extent of about 2.6 acres of the 22 acre parcel 1 and have a combined estimated volume of 43,000 gallons of mobile LNAPL. These plumes contain elevated levels of VOCs, SVOCs, PHCs, PCBs, metals and some pesticides and represents a significant ongoing source of groundwater contamination. The Former Lagoon Plume has caused seepage into Kelley Brook. The plumes have varying characteristics.

3. Physical Location and Site Characteristics

The Site is located at 7 Kelley Road in Plaistow, New Hampshire. The Site was the location of waste oil and petroleum product storage/handling from the 1920's through August 1994. The Site is approximately 39 acres and borders Kelley Brook and associated wetlands to the north. It appears all contamination was released from parcel 1 which is the former 22 acre operations area. The Site is relatively flat with a steep slope adjacent to Kelley Brook and its associated wetlands. Two large man-made surface water run-off pits, SWRP No.1 and SWRP No.2, and a large depression, which was intended as secondary containment for several large former ASTs, exist on-Site. Two buildings remain located on-Site, a newer steel office and maintenance building and a private single family residence on the northern edge of the property along Old County Road. A second older dilapidated office and maintenance building was removed by EPA earlier this Spring to allow for sub-surface characterization. The Site is surrounded by primarily residential properties.

4. Release or Threatened Release into the Environment of a Hazardous Substance or Pollutant or Contaminant

Several private, State and Federal investigations confirm the presence of significant mobile LNAPL plumes beneath the Site. The most recent and comprehensive investigation performed by BRE identified three commingled plumes with a combined estimated volume of 43,000 gallons. The LNAPL is acting as a continuing source of groundwater and surface water contamination at and in the downgradient areas of the Beede Site.

Since October 1992, there has been an intermittent ongoing discharge of LNAPL from the Site LNAPL plumes to Kelley Brook. Several samples have been collected from the discharge area and monitoring wells throughout the areas which demonstrate elevated levels of VOCs, SVOCs, PHCs, PCBs, metals and low-levels of pesticides.

EPA identified numerous contaminants of concern (COCs) and performed a qualitative streamlined human health risk evaluation. The identification of COCs was based on the analysis of chemicals in the LNAPL and associated groundwater, surface water and sediments. Of the COCs identified, the following ten chemicals were detected at the greatest frequency and levels:

- Benzene
- 1,1-Dichloroethane
- cis-1,2-Dichloroethene
- Naphthalene
- 1,1,1-Trichloroethane
- Trichloroethene
- 1,2,4-Trimethylbenzene
- Vinyl chloride
- Cadmium
- Lead

Detected concentrations of COCs exceed EPA and NHDES groundwater and surface water quality standards and criteria (refer to attached Tables 3 and 4). Several of the COCs, particularly the VOCs, have also been detected in adjacent residential water supplies. Point-of-use treatment units have been installed in three wells to remove VOCs which exceed groundwater quality standards.

Several routes of exposure exist including current and future ingestion of groundwater and contact with LNAPL, surface water or sediment by trespassers along Kelley Brook and ingestion of fish from Kelley Brook. There is also a strong potential for an excessive ecological risk resulting from exposure of fish and burrowing mammals to LNAPL-impacted surface water and sediment. Human health and ecological risks will be quantified in the Baseline Risk Assessment being prepared as part of the ongoing remedial investigation.

In conclusion, there is a clear human health risk associated with LNAPL-related contaminants present in groundwater downgradient of the Site. Contaminants associated with LNAPL have been detected in groundwater from private residential wells downgradient of the LNAPL plumes at concentrations exceeding drinking water quality standards. There is a potential human health risk associated with exposure to LNAPL and LNAPL-related contaminants at the site and in the adjacent wetlands and Kelley Brook. Installation of the LNAPL recovery trench has partially contained LNAPL migration, but LNAPL continues to migrate toward the wetlands, and remains a primary source of ongoing groundwater contamination. Removal of the mobile

LNAPL will eliminate this major source of groundwater contamination.

5. National Priorities List Status

The Beede Site was proposed for inclusion on the National Priorities List (NPL) on June 17, 1996. The Governor of New Hampshire sent a letter to EPA requesting the Beede Site be placed on the NPL. NPL inclusion was finalized on December 23, 1996.

B. OTHER ACTIONS TO DATE

1. Previous Actions

There is an extensive history of Federal, State and private party response actions at the Beede Site. This section provides a brief overview of all known clean-up actions performed to date. A compilation of documents detailing each action are available in the existing three Administrative Records for the Beede Site available for review at EPA's Record Center and the Plaistow Public Library. A separate and extensive enforcement history is provided in Section VIII.

1983: The owner of the Elwell residence (east of the site) installed a bedrock well as an alternate water supply after analysis of water from the existing overburden supply well (October 1983) indicated the presence of contaminants including trichloroethene (TCE) above the Safe Drinking Water Act (SDWA) maximum contaminant level (MCL).

November 1989: Site operators reportedly removed eight underground storage tanks (USTs) containing gasoline, used oil, No. 2 fuel oil, and other unspecified substances. The removals were not documented.

June 1990: Site operators installed an on-site bedrock well (WS-2) as an alternate water supply for the Carrington residence (immediately north of the Site) after benzene was detected in the existing overburden supply well at levels exceeding its MCL.

1991-1992: Site operators removed a 140,000-gallon waste oil UST and two smaller USTs. Aries Engineering observed and documented the UST removals. Oil-stained soils were observed in the 140,000-gallon tank excavation. Approximately 50 cubic yards of contaminated soils were removed and stockpiled on site.

November 1991 to January 1992: Site operators installed two oil recovery wells to remove the light non-aqueous phased liquid (LNAPL) which had leaked from the

140,000-gallon UST. to the subsurface.

February 1992: NHDES began maintaining oil absorbent booms and pads to collect LNAPL seeping into the Kelley Brook wetlands. NHDES continued to maintain absorbent booms in the wetlands until the recent installation of an interceptor trench by EPA significantly reduced the discharge.

February to March 1992: Site operators excavated two interceptor trenches between the older site building and the edge of the wetlands. During excavation of the more southerly "upper" trench, several drums of liquid waste containing high concentrations of VOCs were encountered and removed from the trench. According to representatives of EPA and NHDES, neither trench has been effective for collecting LNAPL. An oil sheen has occasionally been observed in the "upper" trench. Product has never been observed in the more northerly "lower" trench, adjacent to the wetlands.

November 1992: Site operators discontinued LNAPL recovery efforts at the recovery wells and trenches. Subsequently, NHDES initiated oil recovery efforts. NHDES removed approximately 7,900 gallons of hazardous waste oil/water between December, 1992 and May, 1994.

June 1993: NHDES covered all large soil piles with tarpaulins in response to residents' concerns regarding off-Site dust migration. New tarpaulins were installed in August, 1998.

August 1994: EPA collected surface water and sediment samples as part of a Preliminary Assessment and Site Inspection for preparation of a Hazard Ranking Package. Additional sampling following in February, 1995.

1995: NHDES installed point-of-entry treatment units at three residential properties and one commercial property adjacent to the Site after VOC contamination above drinking water standards was detected in their bedrock wells. These four properties are served by two wells: one supplying the Howard Manor Condominiums (12 housing units) and the other supplying the Joray and Armstrong residences and an insurance business.

1996 to 1997: EPA and NHDES jointly conducted a time-critical removal action to remove the waste oil, water and sludge remaining in nearly 100 ASTs and 800 drums on-Site. The drums and drum contents were removed and disposed off-Site. The AST contents (oil, water and sludge) were removed and disposed off-Site. The ASTs were

then cleaned, dismantled, and removed from the Site for recycling. The removal action was completed in November 1997. The oil in the tanks and drums contained varying concentrations of PCBs and chlorinated compounds that caused some of it to be regulated under the Toxic Substances Control Act (TSCA) and Resource Conservation and Recovery Act (RCRA). The oil was characterized as TSCA waste (containing greater than 50 parts per million (ppm) PCBs), RCRA parts D and F listed waste, RCRA and non-RCRA waste containing 2 to 49 ppm PCBs, off-specification recyclable oil with less than 2 ppm PCBs, and on-specification recyclable oil with less than 2 ppm PCBs.

September 1997: NHDES retained Sanborn, Head & Associates (SHA) to perform Site characterization activities as a State-lead Remedial Investigation. Most field work has been completed.

March 1998: The older office building and associated slab were demolished by NHDES to allow for sampling of the subsurface landfill.

November 1997: EPA installed an LNAPL interceptor trench, evaluated several LNAPL extraction technologies and performed sampling of groundwater and LNAPL from several new and existing monitoring wells. The interceptor trench has been effective in collecting LNAPL and has significantly reduced seepage to Kelley Brook.

1990 - 1998: NHDES performed routing monitoring of area residential and business wells. During the summer of 1997, an extensive sampling program was performed of all private wells in the area. Monitoring of about 20 key wells continues at a quarterly to annual frequency.

2. Current Actions

EPA entered into a Cooperative Agreement with NHDES to perform the remedial investigation and feasibility study as a State-lead project for the Beede Site. The State consultant, SHA, has performed a majority of the field work and is in the process of compiling the remedial investigation report and baseline risk assessment. The current schedule calls for a Record of Decision in September 1999. The Cooperative Agreement estimates the overall cost of the remedial investigation and risk assessment at about $3.1 million. This estimate does not include the feasibility study.

This proposed NTCRA will support the ongoing remedial investigation by providing groundwater and LNAPL data and a more accurate estimate of the extent of the LNAPL plumes.

C. STATE AND LOCAL AUTHORITIES' ROLES

1. State and Local Actions to Date

NHDES has performed numerous tasks at the Site including various removal activities and extensive Site characterization. However, the State alone does not have the resources to address the significant problems at the Site. In response to NHDES requests, EPA performed emergency removal activities and placed the Site on the NPL. Through a Cooperative Agreement with EPA, NHDES is currently performing a remedial investigation and plans to complete a feasibility study and Draft Record of Decision.

EPA and NHDES continue to enjoy a cooperative working relationship. All actions at the Site have occurred only with significant EPA and NHDES input and both agencies have leveraged regulatory authority, as appropriate, to complete clean-up actions as demonstrated by the efficient completion of the joint emergency removal.

The local government has been closely involved with activities at the Site and has assisted with issues of access and security.

2. Potential for Continued State/Local Response

As stated above, the NHDES entered into a Cooperative Agreement with EPA and has requested to remain the lead-agency through the Record of Decision. EPA is the lead-agency for the NTCRA and currently, there is no need for additional State funding planned.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

The LNAPL poses both human health and environmental threats that, if not addressed, may continue to worsen. Section 300.415(b)(2) of the National Contingency Plan (NCP) lists a number of factors for EPA to consider in determining whether a removal action is appropriate. These factors are:

(i) Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants;
(ii) Actual or potential contamination of drinking water supplies or sensitive ecosystems;
(iii) Hazardous substances or pollutants or contaminants in drums, barrels,

tanks, or other bulk storage containers, that may pose a threat of release;

(iv) High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate;

(v) Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released;

(vi) Threat of fire or explosion;

(vii) The availability of other appropriate federal or state response mechanisms to respond to the release; and

(viii) Other situations or factors that may pose threats to public health or welfare or the environment.

An evaluation of the conditions at the Beede Site conclude that threat factors (i) and (ii) are applicable as described in Sections A and B below.

A. THREATS TO PUBLIC HEALTH OR WELFARE

(i) Actual or potential exposure to hazardous substances or pollutants or contaminants by nearby populations or the food chain.

The LNAPL plume has resulted in periodic seepage of varying intensity to Kelley Brook. More recently, installation of EPA's interceptor trench has significantly reduced the amount of seepage, however, fish in the brook have adversely been impacted as evidenced by extensive tissue analysis. Elevated levels of PCBs have been found in fish tissue immediately down gradient of the Site and may pose a human health risk through the food chain. Kelley Brook is a local fishery. This pathway will be fully evaluated in the pending risk assessment.

(ii) Actual or potential contamination of drinking water supplies.

The Beede Site is located in a predominately residential area. NHDES has been monitoring area supply wells for the past eight years and has documented Site-related contaminants in a number of wells. The Town of Plaistow does not have a public water distribution system. Two downgradient supply wells, which serve multiple residences and a small business, contain levels of VOCs which exceed Maximum Contaminant Limits (MCLs). The NHDES has installed and maintains point-of-use treatment systems for these two wells.

On-Site monitoring wells verify the presence of significant levels of VOCs, PCBs, metals and other contaminants found in the LNAPL. The highest levels of groundwater contaminants are in monitoring wells which also have LNAPL present or are located just downgradient of LNAPL plumes.

B. THREATS TO THE ENVIRONMENT

(i) Actual or potential exposure to hazardous substances or pollutants or contaminants by nearby populations or the food chain.

As stated in Section A directly above, periodic seepage of the LNAPL plume to Kelley Brook has occurred and continues at a diminished rate. Elevated levels of PCBs have been found in fish tissue immediately down gradient of the Site and may cause an adverse risk to the fish and other aquatic life in Kelley Brook. Additionally, sediment from Kelley Brook contains elevated levels of LNAPL-related contaminants which may cause an adverse effect to burrowing mammals and vegetation. Minimal stressed vegetation has been observed in the immediate seepage area. Exposure to fish, mammals and vegetation will be fully evaluated in the pending risk assessment.

(ii) Actual or potential contamination of sensitive ecosystems.

A wetland delineation has been performed and the seepage area lies within a wetland system associated with the Kelley Brook drainage basin. Oil-saturated soils were evident during Site characterization activities. The extent of damage to the ecosystem will be evaluated during the risk assessment.

IV. ENDANGERMENT DETERMINATION

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

V. EXEMPTION FROM STATUTORY LIMITS

CERCLA Section 104(c) states that removal actions can exceed the 12 month and $2 million statutory limits if conditions meet either the "emergency exemption" or the "consistency exemption" criteria. The consistency exemption requires that the proposed removal be appropriate and consistent with the planned remedial action. A consistency exemption was previously approved for the Beede Site by EPA on April 4, 1997 (in a memorandum dated April 3, 1997), at the time of the previous time-critical emergency removal.

The proposed removal action is not expected to exceed 12 months but is estimated to cost $ 2,458,016. As described below, conditions and proposed actions at the Site meet the criteria for the consistency exemption.

A. Appropriateness

EPA OSWER directive 9360.0-12 states that an action is appropriate if the activity is necessary for any one of the following reasons:

1. To avoid a foreseeable threat;
2. To prevent further migration of contaminants;
3. To use alternatives to land disposal; or
4. To comply with the off-site policy.

The proposed actions outlined below will meet criteria one. Exention of the existing interceptor trench will completely eliminate periodic seepage of the LNAPL into Kelley Brook, protecting the ecosystem.

The proposed actions outlined below will meet criteria two. The removal of the LNAPL will eliminate a major source of groundwater contamination, which has already impacted a number of private wells at adjacent properties.

B. Consistency

The Beede Site was finalized on the National Priorities List in December 1996. The proposed actions have been coordinated with the ongoing remedial investigation and are consistent with planned remedial actions for the Site. Removal of the LNAPL is a necessary portion of the overall source control remedy that is planned for the Site. The NHDES has been involved in all planning activities associated with this proposed action to ensure consistency with State regulations.

VI. PROPOSED ACTIONS AND ESTIMATED COSTS

A. PROPOSED ACTIONS

Several technologies and process options were screened in the EE/CA and the treatability study, as shown in attached Table 5. Two technologies, vacuum enhanced extraction (VEE) and belt skimmers, best satisfied the screening criteria and were fully developed as removal alternatives for complete evaluation against the three required criteria; effectiveness, implementability and cost. As shown in the Comparative Analysis, attached as Table 6, while both technologies are readily implementable, VEE requires the least amount of time to complete and is about half the expense of belt skimmers. A full description of the VEE alternative follows.

1. Proposed Action Description

The proposed action will accomplish removal of the mobile LNAPL floating on the groundwater and prevent further migration of LNAPL into the Kelley Brook wetlands by Vacuum Enhanced Extraction (VEE). This will be accomplished by installing a network of VEE wells in each plume area, and extending the current 100 foot-long interceptor trench approximately 24 feet to the west and collecting LNAPL from the trench using passive skimmers. Recovered LNAPL will be temporarily stored in on-Site tanks and periodically sent off-Site for disposal at an appropriate permitted facility. It is assumed that due to elevated concentrations of PCBs (greater than 50 ppm in many samples), the LNAPL will have to be treated/destroyed by incineration.

Two VEE scenarios were evaluated in the EE/CA: System A - aggressive removal of bulk mobile LNAPL (153 wells) and System B - less aggressive removal of LNAPL to reduce the number of required extraction wells to 88. The layout and spacing of extraction wells for System A is based on the use of a hydraulic radius of influence (ROI) of 15-feet. The layout and spacing of extraction wells for System B was based on a combination of the 15-foot ROI and the estimated rate of downgradient LNAPL migration into the extraction well capture zone. Incorporation of the natural migration of LNAPL into the design allowed wider spacing of wells (approximately 45 feet apart) in the direction of the natural groundwater gradient, reducing the total number of wells by almost one half. System A was selected because it will remove LNAPL quicker and is less expensive then System B.

Trench Detail

The 24 foot extension of the recovery trench will involve the following activities:

- Performing additional clearing and grubbing, and installing erosion controls;
- Abandoning and removing existing upgradient monitoring wells;
- Removing the existing sump and manhole structure;
- Excavating soil and placing it on the existing stockpile; and
- Installing three 8-foot long galley chamber sections, stone backfill, HDPE liner, manhole risers and cover, and soil backfill.

One or two additional ORS Filter Buckets will be used to recover LNAPL from the trench extension. The existing trench contains three such filter buckets. The Filter Bucket consists of a floating hydrophobic-oleophilic filter cartridge, a flexible product tube, and a product collection canister with a handle and removable lid. The Filter Bucket is placed in the trench, a support rope is tied off holding the skimmer at a specific location and the skimmer is left to collect the LNAPL. The filter cartridge floats at the product-water interface and automatically adjusts to any water level. LNAPL enters the skimmer through the floating oleophilic-hydrophobic screen filter,

and travel through a flexible tube into a collection canister. The filter allows LNAPL with a specific gravity of less than 1.0 to pass, but repels water. The LNAPL is removed from the collection canister by unscrewing the lid and pouring the product into a storage drum. A typical Filter Bucket skimmer is depicted schematically in Figure 2. This type of skimmer has a 2 liter capacity. Operation and maintenance of the trench system will involve two to three brief Site visits per week to empty the skimmers and inspect recovery equipment and storage containers.

Installation of the recovery trench will generate approximately 25 cubic yards of LNAPL contaminated soils. These soils will be segregated from visually clean soils and stockpiled in an on-Site area designated by EPA and NHDES. The contaminated soils will be placed on a bermed-double liner and covered with a tarpaulin. Visually clean soils will be used as backfill material for the recovery trench or stockpiled separately. The final disposition/treatment of stockpiled soils will be determined during in the Record of Decision planned for September 1999.

VEE System Detail

The conceptual[2] VEE system is designed with the capability of producing a vacuum of 100 inches of water at each well head, with varying vapor extraction rates. In the former lagoon plume and the former UST/AST plume, vapor extraction rates of approximately 35 standard cubic feet per minute (scfm) and 50 scfm respectively are assumed. A vapor extraction rate of 50 scfm is also assumed for the SWRP No. 1 plume because of the nature of the light fuel oil contamination. The fluid extraction rates estimated for the conceptual design account for the potential head losses associated with the manifold piping. The VEE system will be designed for anticipated vapor concentrations of less than 100 ppmV.

The full-scale LNAPL recovery system consists of operating one VEE system for the three identified plume areas. The system will include the following components:

- Extraction wells
- Manifold piping
- Blower
- Vapor and fluid treatment
- Instrumentation and controls

[2] The selected VEE system is a conceptual design. A complete design will be performed by a qualified consultant following selection of VEE in this Action Memorandum.

The conceptual VEE system includes a combination of 2-inch and 4-inch vertical extraction wells. The benefit of the 4-inch extraction wells is that after the bulk product is removed, conventional skimming or pumping equipment can be installed, if needed.

The conceptual layout and spacing of wells for System A was determined based on the use of the ROI of 15-feet and a resulting 30 foot well spacing. The number of wells for System A was determined by dividing the plume area by the area of influence for a single well. The area of influence using a 15-foot ROI is approximately 706 square feet, resulting in 56 wells in the former lagoon plume, 82 wells in the former UST/AST plume, and 15 wells in the SWRP No. 1 plume, for a total of 153 wells. The wells would be placed evenly within the plume areas to provide areal coverage.

The extraction wells will be screened through the estimated LNAPL smear zone and water table, and will be constructed to reduce the potential of short circuiting. A low permeability cover (such as pavement or polyethylene sheeting) may be placed over the plume area to further reduce the potential for short-circuiting. This and other potential system enhancements will be evaluated in the design phase.

Each well head will be equipped with a 1.5-inch diameter drop tube that can be adjusted to accommodate product level fluctuations; a flow meter and a pressure gauge to monitor air flow and vacuum pressures; and a control valve to regulate flow rates. These features will allow monitoring, adjustment, and shut-off of individual wells to modify the system in response to changing conditions and enhance system performance. The drop tubes will be connected to the blower system by 2-inch diameter PVC pipe installed along the ground surface and insulated to protect it from freezing. See Figures 3 and 4 for VEE well detail and process flow diagrams.

The Site and recovery wells will be divided into three zones and operated/cycled by a single equipment train. The system is designed to operate each zone for an average of approximately 4 hours per day. The cycling will allow each zone to recover while the other zones are operated. During the down times for each zone, the product depth will be measured and the vacuum intakes will be adjusted.

A vacuum blower capable of producing approximately 1000 scfm will be used for the VEE system. The blower will be equipped with a particulate filter, pressure and vacuum relief valves, and a silencer. The extracted liquid and vapors will be initially treated through a moisture separator to prevent damage to the blower system and increase the effectiveness of the downstream treatment systems. The vapors will be treated by 2000 pound activated carbon units rated for 1000 scfm flow rates. Periodic

air monitoring will be performed to assure compliance with applicable standards. The liquids will be processed through an oil/water separator unit. The water will be collected in one 20,000 gallon storage tank and periodically disposed off-Site. The oil (LNAPL) will be collected in one 10,000 gallon storage tank and periodically disposed off-Site.

The blower unit, and vapor and liquid treatment equipment will be located within an enclosed structure located in a central area between the plumes. The structure will be designed and constructed with materials that would minimize the noise levels generated by the VEE system.

The overall system will be monitored to determine the effectiveness of the operation. The LNAPL thickness will be checked at least weekly, and monthly analytical samples of groundwater and air samples from the off-gas treatment system will be collected. The collected groundwater and LNAPL will be analyzed to determine proper disposal requirements. Air monitoring will be conducted at the facility boundary during system operation to ensure that ambient air quality standards are not exceeded. The VEE system will continue to operate until the LNAPL thickness is reduced to a sheen, and the vacuum is unable to recover mobile LNAPL.

Installation of the extraction wells will result in the generation of approximately 18 cubic yards of soils that will be stockpiled on-Site. Three types of soils are expected to be encountered (from the surface downward): surficial soils containing PCBs, lead, VOCs, and petroleum hydrocarbons; relatively clean unsaturated soils; and visibly LNAPL-contaminated (smeared) soils. These soils will be segregated into three stockpiles using a combination of soil contamination profiles from the remedial investigation, field screening, and visual observation. Based on previous drilling experience at the Site, LNAPL-smeared soils will be easily distinguished from the other soils through visual observation and VOC screening using a photo-ionization or flame-ionization detector (PID and FID). Depending on the contaminants present and their concentrations, separation of contaminated surficial soils from underlying clean soils may be done using one or a combination of field detectors or field screening methods. Field detection methods (for real-time contaminant detection) include portable x-ray fluorescence (XRF) probes for lead, and PIDs or FIDs for VOCs. Petroleum hydrocarbons (TPH) and PCBs could be detected using field screening test kits (such as immunoassay test kits. An evaluation of appropriate field screening methods will be conducted and a methodology for segregation of the contaminated soils will be prepared during the VEE system design. The LNAPL-smeared soils and contaminated surficial soils will each be stored in a designated area on-Site and placed on a bermed-double liner and covered with a tarpaulin. Visually clean soils will be used as backfill material for the recovery trench or stockpiled separately. The final

disposition/treatment of stockpiled soils will be determined during in the Record of Decision planned for September 1999.

NHDES has been informed that LNAPL and contaminated groundwater will be disposed of off-Site at appropriate TSCA and/or RCRA-compliant hazardous waste disposal and/or treatment facilities. Prior to disposition, LNAPL and water will be stored in temporary tanks on-Site to allow for accumulation of an adequate volume for transport by tanker truck at a frequency not to exceed ninety (90) days.

The only Post-Removal Site Control (PRSC) activity anticipated is potential long-term maintenance of the recovery trench. Although a significant quantity of the mobile LNAPL will be removed, seepage into the trench is likely to continue until the residual smear zone is addressed under the planned Record of Decision (ROD). PRSC will be managed by the EPA remedial program.

This proposed alternative was not modified significantly as a result of public comment. Appropriate sound-dampening controls will be utilized to minimize impact to the surrounding community.

2. Contribution to Remedial Performance

A remedial investigation/feasibility study (RI/FS) is currently being performed. The final clean-up action for the Beede Site is anticipated to include source control and management of migration components. Implementation of this NTCRA is anticipated to be consistent with final remedial actions and will facilitate necessary source control activities.

3. Description of Alternative Technologies

Several LNAPL recovery technologies were evaluated in the EE/CA and associated treatability study. The technologies were screened against the three selection criteria shown in attached Table 5; effectiveness, implementability and cost. Results of the screening process demonstrated that *belt skimmers* and the *VEE system* would be most effective in collecting LNAPL, while minimizing the extraction of groundwater, which would have added considerable expense to the NTCRA.

4. Engineering Evaluation/Cost Analysis (EE/CA)

An Approval Memorandum to perform an Engineering Evaluation/Cost Analysis (EE/CA) for a Non-Time Critical Removal Action (NTCRA) was approved by the OSRR Division Director on August 30, 1996 (attached as Appendix 1). The following

removal objectives were established:

- prevent further release of LNAPL contaminants to the groundwater; and
- prevent further discharge of the LNAPL plume to Kelley Brook.

An additional objective, to minimize extraction of contaminated groundwater, was added early in the EE/CA process in recognition of the additional expense and lack of hydrological information necessary to implement a full-scale groundwater remediation system.

It was determined that a treatability study was necessary to adequately evaluate the effectiveness of the various recovery technologies for collecting the mobile LNAPL, and to evaluate the effectiveness of a recovery trench for minimizing oil seepage into the wetland. The treatability study also included additional Site characterization to determine the full nature and extent of the LNAPL plumes. A Treatability Study Report was generated in April, 1998, detailing the results of the investigation and technologies evaluation. Results from the study were incorporated into the EE/CA Report which was finalized in June, 1998. The EE/CA recommended Alternative 1 - System A: Vacuum Enhanced Extraction (aggressive system) and Passive Recovery Trench to remove the LNAPL. A Fact Sheet explaining the proposed NTCRA was distributed to the public on June 15, 1998. A public meeting and separate formal hearing were conducted during the public comment period from June 17 to July 16, 1998. Three comments were received during the comment period. General response to the proposed alternative was receptive. A Responsiveness Summary detailing the comments and EPA's responses was prepared. This and other documents used to support NTCRA alternative selection in this Action Memorandum are available in the Site Administrative Record. The Administrative Record index is attached as Appendix 2.

5. Applicable or Relevant and Appropriate Requirements (ARARs)

40 CFR 300.415(i) requires that Fund-financed removal actions at CERCLA sites meet ARARs (Applicable or Relevant and Appropriate Requirements) to the extent practicable considering the urgency of the situation and the scope of the removal. ARARs are promulgated, enforceable federal and state, environmental or public health requirements that are determined to be legally applicable or relevant and appropriate to the hazardous substances, cleanup actions, or other circumstances at a CERCLA site.

TBCs (standards and guidance To Be Considered) are non-promulgated advisories or guidance issued by federal or state government that are not legally binding, but may be considered during the development of alternatives. There are three types of ARARs

and TBCs that must be considered in planning CERCLA actions: chemical-specific, location-specific, and action-specific.

Chemical-specific ARARs and TBCs are typically health or risk based numerical values that are used to establish the acceptable amount or concentration of a chemical that may remain in, or be discharged to, the environment. Location-specific ARARs and TBCs are restrictions placed on the conduct of activities solely because they are in specific areas. Action-specific ARARs are usually technology or activity based requirements or limitations on actions taken with respect to hazardous wastes.

A complete listing and explanation of all ARARs and TBCs for this NTCRA are included in attached Tables 7, 8 and 9. The following provides a brief overview.

Chemical-Specific ARARs

Since all of the LNAPL and contaminated groundwater collected during operation of the VEE system and trench will be disposed of off-site and given that any contaminated soil generated during trench or extraction well installation will be stored on-site for final treatment consistent with the ROD, there are no chemical-specific ARARs for this NTCRA.

Location-Specific ARARs

The majority of Federal and State location-specific ARARs and TBCs relate to actions which may impact wetlands (i.e., executive order 11990), occur in a floodplain (i.e., executive order 11998) or require dredging or filling (i.e., 40 CFR 230). A portion of the NTCRA, particularly trenching, will occur in such area. Controls will be implemented, consistent with applicable dredge and fill regulations, to minimize impact to the wetlands, such as the installation of a silt-curtain to control run-off. The VEE system will be constructed outside the floodplain. All identified ARARs will be attained.

Action-Specific ARARs

A variety of Federal and State action-specific ARARs and TBCs were identified dealing primarily with issues of facility standards, air monitoring, fugitive dust and emissions. Regulations regarding facility standards (i.e., 40 CFR 264 Subpart B) generally require that training, security and inspections occur at hazardous waste facilities and dictate required monitoring and design requirements. The Site is secure and only trained personnel will operate the facility.
Action-specific ARARs also involve compliance with RCRA standards for storage of

hazardous waste on site. Compliance with these regulations will be achieved by meeting applicable requirements under RCRA for storage of hazardous waste in tanks and soil piles(hazardous waste piles, see 40CFR Part 264).

The Toxic Substances Control Act (TSCA) is also applicable to this removal action since PCB contaminated oil, water and soil in excess of 50 ppm, but less than 500 ppm, are present. PCB contaminated oil and water to be extracted from the trench and VEE system will be stored in a temporary tank system that, consistent with TSCA, is sufficiently rigid. A Spill Prevention Plan will be developed. The PCB oil and water will be disposed of regularly throughout the removal but may exceed the allowable 30 day duration under TSCA. Exceedence of the 30 day storage requirement under TSCA is allowable if a risk- based disposal approach is followed as specified at 40 CFR Section 761.61 (c).

PCB contaminated soil will be generated from extension of the trench and installation of the VEE extraction wells. These soils will be stored on-site, consistent with the TSCA regulations, which require a double-liner, cover, berm and other measure to minimize the potential for fugitive dust or soil migration. Storage of the PCB soil pile beyond 180 days is likely since the final remediation of the Site will not occur until the year 2,001 or later. Exceedence of of 180 days, as provided under 761.65(c)(9) is allowed consistent with 761.61(c) if a risk-based disposal approach is followed.

There are various regulations regarding air emission standards (i.e., 40 CFR 264 Subpart AA) that set forth monitoring requirements and emission limits. All air emissions from the VEE system will be directed through carbon units to capture any hazardous constituents prior to final discharge. Routine air monitoring will occur to assure compliance with all federal and state emissions standards. All identified ARARs will be attained.

6. Project Schedule

The following planned project schedule assumes this Action Memorandum is approved this month and that there will be no delay in obtaining NTCRA funds from the National Prioritization Panel.

ACTIVITY	PLANNED START	PLANNED COMPLETION
Sign Action Memorandum	n/a	September 30, 1998
Issue Statement of Work for design	October 1998	January 1999
Request NTCRA Funding	October 1998	January 1999
Hold Public Meeting	n/a	January 1999
Procure NTCRA Contractor	February 1999	May 1999
Perform NTCRA	June 1999	June 2000
Perform PRSC	July 2000	Implementation of Remedial Action (September 2001)

B. ESTIMATED COSTS

EPA recently completed a time-critical removal action at the Beede Site. The overall cost of the emergency removal was approximately $3.2 million dollars. As discussed in Section V and consistent with Section 104(c)(2) of CERCLA, a 12 month and $2 million dollar "consistency" exemption request was approved during performance of the emergency removal.

As the Beede Site was not operated by a state or political subdivision, pursuant to Section 300.525(b) of the NCP, there is no requirement for a state cost-share for the NTCRA. The following costs are estimated for this NTCRA.

Extramural Costs

NTCRA Response Contractor	$ 2,458,016
RACS Oversight (10%)	$ 245,802
25% project contingency	$ 675,954
Total Extramural Costs	$ 3,379,772

Intramural Costs

EPA Regional Personnel	$ 100,000

TOTAL NTCRA PROJECT CEILING	**$ 3,479,772**

VII. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

- Further migration of the LNAPL plumes and associated groundwater contamination is likely. Levels of contamination in several area residential wells appear to exhibit increasing trends. Two wells, one which serves a small condominium complex and another which jointly serves a residence and a small business, exceed MCLs and required the installation of point-of-use treatment systems by NHDES. There is no public water system in Plaistow or the neighboring New Hampshire communities. Additional private water supplies may be impacted.

- Continuing seepage into Kelley Brook and the associated wetlands is likely. The existing trench, installed under the EE/CA treatability study, has greatly reduced plume seepage into the brook. However, maintenance of the trench is high because of continual LNAPL plume migration and extension of the trench is necessary to fully intercept and eliminate discharge of the plume to Kelley Brook.

- If not performed under this NTCRA, removal of the LNAPL plume would be a necessary part of the final Site cleanup. The LNAPL plume is the most likely source of on-site and off-site groundwater contamination. The State's Groundwater Protection Strategy (ws-410) requires the treatment or removal of all sources of groundwater contamination. Under the Remedial Program, portions of ws-410 will be applicable and will require the removal of the LNAPL plume.

VIII. OUTSTANDING POLICY ISSUES

None known at this time.

IX. ENFORCEMENT

As stated in Section 300.415(a)(2) of the NCP, EPA's policy concerning removal enforcement is that where PRPs are known, an effort shall be made, to the extent practicable, to determine whether they can and will perform necessary removal actions. Prior to initiating time-critical removal actions in July 1996, EPA issued Notice Letters to the current owners requesting they perform necessary removal activities. Investigations to date have demonstrated that the owner is not financially viable.

This non time-critical removal action will be performed as a fund-lead. Further Potentially Responsible Party (PRP) search activities are currently being performed by EPA's remedial program. It is expected that viable PRPs will be identified prior to initiating remedial cleanup actions. A full description of EPA's PRP search activities is "enforcement sensitive" and included in a separate Enforcement Addendum.

X. RECOMMENDATION

Conditions at Beede Waste Oil meet the following National Contingency Plan (NCP) Section 300.415(b)(2) criteria for removal:

(i) Actual or potential exposure to nearby populations, animals, or the food chain from hazardous substances or pollutants or contaminants...[300.415(b)(2)(i)]; and

(ii) Actual or potential contamination of drinking water supplies or sensitive ecosystems... [300.415(b)(2)(ii)].

This action meets the criteria for a consistency waiver from the 12 month and $2 million statutory limits. I therefore recommend you approve this Non Time-Critical Removal Action (NTCRA) with the estimated total project cost of **$3,479,772,** of which approximately **$2,458,016** will be requested from the National Prioritization Panel for contractor support.

Approve:

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

Date:

9/30/98

TABLES

TABLE 1
SUMMARY OF LNAPL ANALYSIS RESULTS
ACTION MEMORANDUM
BEEDE WASTE OIL SITE, PLAISTOW, NH

Location/ Plume Area	BR-18 SWRP 1	BR-27 SWPR 1/UST	BR-E02 UST	BR-22 UST/SWRP 2	Sump UST/Trench
Viscosity (centiStokes)	4.09	23.8	54.3	43.3	107
Gasoline Range TPH (mg/l)	30,000	47,000	33,000	26,000	12,000
Diesel Range TPH (mg/kg)	750,000	690,000	660,000	570,000	630,000
Diesel Fuel (mg/kg)	750,000	340,000	150,000	210,000	71,000
Motor Oil (mg/kg)	5,000 U	350,000	510,000	360,000	559,000

Notes:

1 Samples were collected by B&RE personnel on November 14, 1997 and November 20, 1997.
2 Analysis of viscosity were completed by Intertek Testing Services Environmental Laboratories of Colchester, VT using ASTM Method D445-83. All other analysis were completed by ICM Laboratories of Randolph, NJ using EPA Method 8015B.
3 "U"-Not detected.

TABLE 2
SUMMARY OF LNAPL ORGANIC DATA
ACTION MEMORANDUM
BEEDE WASTE OIL SITE, PLAISTOW, NEW HAMPSHIRE

LOCATION	SH-5	SH-7	AE-11S	AE-8	AE-9	AE-16	AE-3	AE-4	SH-6	SH-10
LNAPL PLUME AREA	FORMER LAGOON			UST/AST			SWRP NO. 1		SWRP NO. 2	
VOC DILUTION FACTOR	2	2	10	1	2	10	2	1	2	10
Benzene	40				20				140	
sec-Butylbenzene	50	30	60	22	120	60	320	330	120	250
Ethylbenzene	340	170	430	38	490	190	270	170	1200	2200
Isopropylbenzene	60	40	80	11	100	50	160	130	170	200
p-Isopropyltoluene	70	30	60	21	770	60	310	320	110	250
Naphthalene	460	210	550	130	720	530	770	530	490	1000
n-Propylbenzene	240	140	310	34	320	170	350	320	300	500
Toluene	1200	120	670	8	770	140	98	7	860	270
1,2,4-Trimethylbenzene	1600	990	1900	440	1600	1400	2500	2600	1900	4200
1,3,5-Trimethylbenzene	530	360	620	170	620	500	1200	1100	910	1800
o-Xylene	490	300	620	130	680	360	550	400	900	1500
m,p-Xylene	1300	620	1500	290	1800	680	1100	500	2700	460
TOTAL NON-CHLORINATED AROMATIC VOCs	6380	3010	6800	1354	8010	4140	7628	6407	9800	16770
1,2-Dichlorobenzene	40	40		10	40				60	50
1,4-Dichlorobenzene									10	
1,1-Dichloroethane				9					160	
cis-1,2-Dichloroethene	180	10	80	9	20				70	
trans-1,2-Dichloroethene									10	
Tetrachloroethene	70								20	80
1,1,1-Trichloroethane	880	40	300		220				140	
Trichloroethene	1400		120							
TOTAL CHLORINATED VOCS	2570	90	500	28	280				470	130
C_4-C_7 VPHCs	1000	200	2000	200	2000	500	200		5000	2000
C_8-C_{10} VPHCs	10000	2000	10000	2000	10000	10000	20000	10000	20000	20000
C_{11}-C_{16} VPHCs	20000	10000	20000	10000	20000	50000	100000	50000	50000	100000
TOTAL VPHCS	31000	12200	32000	12200	32000	60500	120200	60000	75000	122000
Arochlor 1242	11	9	27	20	52	16	14	34	20	22
Arochlor 1260	ND	8	10	12	15	31	7	12	60	35
TOTAL PCBS	11	17	37	32	67	47	21	46	80	57

TABLE 2
SUMMARY OF LNAPL ORGANIC DATA
ACTION MEMORANDUM
BEEDE WASTE OIL SITE, PLAISTOW, NEW HAMPSHIRE

Notes:

1. Samples were collected by SHA personnel between May 31 and June 17, 1995.
2. Analyses were completed by Eastern Analytical, Inc. (EAI) of Concord, New Hampshire for VOCs using EPA Method 8260 and for PCBs using ASTM Method 4059.
3. Concentrations are presented as a percent (%) or in milligrams per kilogram (mg/kg) which are equivalent to parts per million (ppm) and grams per milliliter (gm/ml).
4. The standard detection limit for PCBs is 5 mk/kg. Refer to the analytical data reports for specific detection limits.

TABLE 3
COMPARISON OF CONCENTRATIONS DETECTED IN GROUNDWATER TO STANDARDS, CRITERIA, AND RISK-BASED CONCENTRATIONS (RBCs)
ACTION MEMORANDUM
BEEDE WASTE OIL SITE, PLAISTOW, NEW HAMPSHIRE

Chemical[1]	Background Wells (WS-1, AE-10, AE-20)		Site Monitoring Wells		EPA Primary SDWA Standards[3] (µg/L)		EPA Drinking Water Health Advisories[3] (µg/L)	New Hampshire Groundwater Quality Standards[4] (µg/L)	Region III Tap Water RBC[5] (µg/L)
	Frequency	Range (µg/L)	Frequency of Detections[2]	Range of Positive Detections (µg/L)	MCL (Status)	MCLG (Status)			
VOLATILE ORGANICS									
Benzene	0/3	ND	17/36	2-780	5 (F)	0 (F)	200 (10-day, 10-kg child) (F)	5	0.36
2-Butanone	0/3	ND	1/36	10	--	--	-- (F)	170	1,900
sec-Butylbenzene	0/3	ND	5/36	2-100	--	--	-- (D)	--	61
Chloroethane	0/3	ND	2/36	200-540	-- (L)	-- (L)	-- (D)	--	8,600
Chloroform	0/3	ND	1/36	2	100[6]/80[7] (P)	0 (P)	400 (Long-Term, 70-kg Adult) (D)	6	0.15
1,2-Dichlorobenzene	0/3	ND	9/36	1-30	600 (F)	600 (F)	600 (Lifetime, 70-kg Adult) (F)	600	270
1,1-Dichloroethane	0/3	ND	18/36	2-3,000	--	--	--	81	810
1,2-Dichloroethane	0/3	ND	5/36	2-30	5 (F)	0 (F)	2,600 (Long-Term, 70-kg Adult) (F)	5	0.12
1,1-Dichloroethene	0/3	ND	3/36	20-40	7 (F)	7 (F)	7 (Lifetime, 70-kg Adult) (F)	7	0.044
cis-1,2-Dichloroethene	0/3	ND	20/36	2-2,200	70 (F)	70 (F)	70 (Lifetime, 70-kg Adult) (F)	70	61

TABLE 3
COMPARISON OF CONCENTRATIONS DETECTED IN GROUNDWATER TO STANDARDS, CRITERIA, AND RISK-BASED CONCENTRATIONS (RBC)
ACTION MEMORANDUM
BEEDE WASTE OIL SITE, PLAISTOW, NEW HAMPSHIRE

Chemical[1]	Background Wells (WS-1, AE-10, AE-20)		Site Monitoring Wells		EPA Primary SDWA Standards[3] (μg/L)		EPA Drinking Water Health Advisories[3] (μg/L)	New Hampshire Groundwater Quality Standards[4] (μg/L)	Region III Tap Water RBC[5] (μg/L)
	Frequency	Range (μg/L)	Frequency of Detections[2]	Range of Positive Detections (μg/L)	MCL (Status)	MCLG (Status)			
trans-1,2-Dichloroethene	0/3	ND	2/36	40-110	100 (F)	100 (F)	100 (Lifetime, 70-kg Adult) (F)	100	120
Ethylbenzene	0/3	ND	18/36	1-1,300	700 (F)	700 (F)	700 (Lifetime, 70-kg Adult) (F)	700	1,300
Isopropylbenzene (cumene)	0/3	ND	12/36	3-80	--	--	-- (D)	--	1,500
p-Isopropyltoluene (p-cymene)	0/3	ND	5/36	1-100	--	--	-- (D)	--	--
4-Methyl-2-pentanone	0/3	ND	2/36	100-200	--	--	--	350	2,900
Methyl-tert-butyl ether	0/3	ND	1/36	210	-- (L)	-- (L)	20-200[6] (Lifetime, 70-kg Adult) (D)	100	180
Naphthalene	0/3	ND	18/36	2-460	--	--	20 (Lifetime, 70-kg Adult) (F)	20	--
n-Propylbenzene	0/3	ND	16/36	1-190	--	--	-- (D)	--	--
Tetrachloroethene	0/3	ND	6/36	2-30	5 (F)	0 (F)	5,000 (Long-Term, 70-kg Adult) (F)	5	1.1
Toluene	0/3	ND	16/36	5-1,500	1,000 (F)	1,000 (F)	1,000 (Lifetime, 70-kg Adult) (F)	1,000	750

TABLE 3
COMPARISON OF CONCENTRATIONS DETECTED IN GROUNDWATER TO STANDARDS, CRITERIA, AND RISK-BASED CONCENTRATIONS (RBC)
ACTION MEMORANDUM
BEEDE WASTE OIL SITE, PLAISTOW, NEW HAMPSHIRE

Chemical[1]	Background Wells (WS-1, AE-10, AE-20)		Site Monitoring Wells		EPA Primary SDWA Standards[3] (μg/L)		EPA Drinking Water Health Advisories[3] (μg/L)	New Hampshire Groundwater Quality Standards[4] (μg/L)	Region III Tap Water RBC[5] (μg/L)
	Frequency	Range (μg/L)	Frequency of Detections[2]	Range of Positive Detections (μg/L)	MCL (Status)	MCLG (Status)			
1,1,1-Trichloroethane	0/3	ND	19/36	4-1,800	200 (F)	200 (F)	200 (Lifetime, 70-kg Adult) (F)	200	790
Trichloroethene	0/3	ND	8/36	2-24	5 (F)	0 (F)	-- (F)	5	1.6
1,2,4-Trimethylbenzene	0/3	ND	21/36	1-1,700	--	--	-- (D)	--	300
1,3,5-Trimethylbenzene	0/3	ND	17/36	2-760	--	--	-- (D)	--	300
Vinyl chloride	0/3	ND	3/36	110-220	2 (F)	0 (F)	50 (Long-Term, 70-kg Adult) (F)	2	0.019
o-Xylene	0/3	ND	19/36	3-940	10,000[9] (F)	10,000[9] (F)	10,000[9] (Lifetime, 70-kg Adult) (F)	10,000[9]	1,400
m,p-Xylene	0/3	ND	18/36	2-2,600	10,000[9] (F)	10,000[9] (F)	10,000[9] (Lifetime, 70-kg Adult) (F)	10,000[9]	520 [10]
METALS									
Arsenic	0/3	ND	9/35	10-90	50 *	-- *	-- (D)	50	11
Barium	0/3	ND	19/35	50-670	2,000 (F)	2,000 (F)	2,000 (Lifetime, 70-kg Adult) (F)	2,000	2,600

TABLE 3
COMPARISON OF CONCENTRATIONS DETECTED IN GROUNDWATER TO STANDARDS, CRITERIA, AND RISK-BASED CONCENTRATIONS (RBC)
ACTION MEMORANDUM
BEEDE WASTE OIL SITE, PLAISTOW, NEW HAMPSHIRE

Chemical[1]	Background Wells (WS-1, AE-10, AE-20)		Site Monitoring Wells		EPA Primary SDWA Standards[3] (μg/L)		EPA Drinking Water Health Advisories[3] (μg/L)	New Hampshire Groundwater Quality Standards[4] (μg/L)	Region III Tap Water RBC[5] (μg/L)
	Frequency	Range (μg/L)	Frequency of Detections[2]	Range of Positive Detections (μg/L)	MCL (Status)	MCLG (Status)			
Cadmium	0/3	ND	13/35	1-27	5 (F)	5 (F)	5 (Lifetime, 70-kg Adult) (F)	5	18
Chromium	1/3	3	13/35	2-12	100 (F)	100 (F)	100 (Lifetime, 70-kg Adult) (F)	100	180[11]
Lead	0/3	ND	10/35	10-2,600	TT** (F)	0 (F)	--	15	--
PETROLEUM HYDROCARBONS[12]									
C_8-C_{14}	0/3	ND	2/35	4,100-8,000	--	--	--	--	--
C_8-C_{18}	0/3	ND	2/35	1,400	--	--	--	--	--
C_{10}-C_{20}	0/3	ND	13/35	700-790,000	--	--	--	--	--
C_{11}-C_{20}	0/3	ND	1/35	700	--	--	--	--	--
C_{20}-C_{32}	0/3	ND	7/35	2,900-1,700,000	--	--	--	--	--
C_{20}-C_{36}	0/3	ND	3/35	3,600-60,000	--	--	--	--	--

1. Chemicals with detected concentrations exceeding one or more of the standards, criteria, or RBC are presented in bold italics.
2. Duplicate samples were counted as individual samples when determining frequency of detection.
3. Obtained from Drinking Water Regulations and Health Advisories, U.S. EPA, Office of Water, October 1996.
4. Obtained from New Hampshire State Regulations, Env-Ws 410.05, January 1997.
5. Obtained from U.S. EPA Region III Risk-Based Concentration Table, May 10, 1996.
6. Current MCL.
7. 1994 Proposed rule for disinfectants and disinfection by-products. Total for all THMs combined cannot exceed the 0.08 level.
8. If the cancer classification C is accepted, the Lifetime Health Advisory is 20 ug/L, otherwise it is 200 ug/L.
9. Based on total xylenes.

TABLE 3
COMPARISON OF CONCENTRATIONS DETECTED IN GROUNDWATER TO STANDARDS, CRITERIA, AND RISK-BASED CONCENTRATIONS (RBC)
ACTION MEMORANDUM
BEEDE WASTE OIL SITE, PLAISTOW, NEW HAMPSHIRE

10. Based on p-xylene.
11. Based on hexavalent chromium
12. C_x-C_x entries refer to carbon chain length of detected petroleum hydrocarbons.

-- Standard, health advisory, or RBC is not available for this chemical.
ND Not Detected
* Under Review
** The promulgated SDWA standard for lead in drinking water is a treatment technique. The action level used to measure compliance with this standard is 15 ug/L.

Codes for the status of the EPA Health Advisories and SDWA Standards are as follows:

D	Draft	L	Listed for regulation
P	Proposed	F	Final
TT	Treatment Technique		

TABLE 4
COMPARISON OF CONCENTRATIONS DETECTED IN SURFACE WATER TO STANDARDS AND CRITERIA
ACTION MEMORANDUM
BEEDE WASTE OIL SITE, PLAISTOW, NEW HAMPSHIRE

Chemical[1]	Frequency of Detection	Range of Positive Detections (µg/L)	EPA Ambient Water Quality Criteria for Human Health[2] (µg/L)		New Hampshire Water Quality Standards[3] (µg/L)	
			Ingestion of Water/Consumption of Aquatic Life	Consumption of Aquatic Life Only	Ingestion of Water/Consumption of Aquatic Life	Consumption of Aquatic Life Only
Benzene	1/6	8	1.2	71	5	40
2-Butanone	1/6	20	--	--	--	--
sec-Butylbenzene	1/6	2	--	--	--	--
Chlorobenzene	1/6	60	680	21,000	488	--
1,2-Dichlorobenzene	1/6	2	--	--	400	2,600
1,1-Dichloroethane	2/6	2-7	--	--	--	--
cis-1,2-Dichloroethene	1/6	8	--	--	--	--
Ethylbenzene	1/6	10	3,100	29,000	1,400	3,280
Isopropylbenzene (cumene)	1/6	1	--	--	--	--
Naphthalene	2/6	1-3	--	--	0.0028[4]	0.0311[4]
n-Propylbenzene	2/6	1-2	--	--	--	--
Toluene	2/6	1-5	6,800	200,000	--	--
1,2,4-Trimethylbenzene	1/6	4	--	--	--	--
o-Xylene	1/6	5	--	--	--	--
m,p-Xylene	1/6	4	--	--	--	--

1. Chemicals with detected concentrations exceeding one or more of the standards or criteria are presented in bold italics.
2. Obtained from Origin of Human Health Criteria, U.S. EPA, Office of Water, June 1991.
3. Obtained from New Hampshire State Regulations, Env-Ws 432, January 1997.
4. Based on standard for polynuclear aromatic compounds.

TABLE 5
EVALUATION OF TECHNOLOGIES AND PROCESS OPTIONS
ACTION MEMORANDUM
BEEDE WASTE OIL SITE, PLAISTOW, NEW HAMPSHIRE

GENERAL RESPONSE ACTION	TECHNOLOGY	PROCESS OPTION	EFFECTIVENESS	IMPLEMENTABILITY	COST	CONCLUSION
Collection	Extraction Wells	Passive Skimmers	The oleophillic-hydrophobic screen effectively minimizes the collection of water in the canister. Product recovery rates are relatively low.	Readily implementable in wells and trenches.	Capital: Moderate O&M; Low to moderate	Eliminated for wells
		Active Skimmers	May not be effective for recovering high viscosity LNAPL.	In addition to the FAP pump and total fluid pump used during the treatability study, various other skimmer pumps are available.	Capital: Moderately High O&M: Moderate	Eliminated for wells
		Belt Skimmers	Effective method for collecting bulk LNAPL from wells or trenches. As the product thickness is reduced below 1/8-inch, the belt tends to collect additional water, reducing product recovery efficiency.	Readily implementable in wells and trenches.	Capital: Moderate O&M: High	Retained for wells
		Dual-Phase Pumping System	Effective method for collecting water and LNAPL. During the treatability study, the product recovery efficiency's were low.	Readily implementable. Oil/water separation may be needed. High volume of extracted groundwater would require on site treatment.	Capital: High O&M: High	Eliminated for wells

TABLE 5
EVALUATION OF TECHNOLOGIES AND PROCESS OPTIONS
ACTION MEMORANDUM
BEEDE WASTE OIL SITE, PLAISTOW, NEW HAMPSHIRE
PAGE 2 OF 3

GENERAL RESPONSE ACTION	TECHNOLOGY	PROCESS OPTION	EFFECTIVENESS	IMPLEMENTABILITY	COST	CONCLUSION
Collection	Extraction Wells	VEE System	VEE systems have been proven to be an effective method for recovering LNAPL from various sites. Based on results of the treatability study, the VEE system was the most effective and efficient recovery technology tested in the three plumes.	Readily implementable. Down-well mechanical equipment is not required., reducing operational problems. A treatment building would be required to house the VEE equipment and liquid and vapor treatment units.	Capital: High O&M: High	Retained for wells
Containment	Recovery Trench	Passive Skimmers	The oleophillic-hydrophobic screen effectively minimizes the collection of water in the canister. Product recovery rates are relatively low.	Readily implementable in wells and trenches.	Capital: Moderate O&M; Low to Moderate	Retained for trench
		Active Skimmers	May not be effective for recovering high viscosity LNAPL.	In addition to the FAP pump and total fluid pump used during the treatability study, various other skimmer pumps are available.	Capital: Moderately High O&M: Moderate	Eliminated for trench
		Belt Skimmers	Effective method for collecting bulk LNAPL from wells or trenches. As the product thickness is reduced below 1/8-inch, the belt tends to collect additional water, reducing product recovery efficiency.	Readily implementable in wells and trenches.	Capital: Moderate O&M: High	Eliminated for trenches

TABLE 5
EVALUATION OF TECHNOLOGIES AND PROCESS OPTIONS
ACTION MEMORANDUM
BEEDE WASTE OIL SITE, PLAISTOW, NEW HAMPSHIRE

GENERAL RESPONSE ACTION	TECHNOLOGY	PROCESS OPTION	EFFECTIVENESS	IMPLEMENTABILITY	COST	CONCLUSION
Containment	Recovery Trench	Dual-Phase Pumping System	Effective method for collecting water and LNAPL. During the treatability study, the product recovery efficiency's were low.	Readily implementable. Oil/water separation may be needed. High volume of extracted groundwater would require on site treatment.	Capital: High O&M: High	Eliminated for trench
		VEE System	VEE systems have been proven to be an effective method for recovering LNAPL from various sites. Based on results of the treatability study, the VEE system was the most effective and efficient recovery technology tested in the three plumes.	Readily implementable. Down-well mechanical equipment is not required., reducing operational problems. A treatment building would be required to house the VEE equipment and liquid and vapor treatment units.	Capital: High O&M: High	Eliminated for trench

TABLE 6
COMPARATIVE ANALYSIS OF REMOVAL ACTION ALTERNATIVES
ACTION MEMORANDUM
BEEDE WASTE OIL SITE
PLAISTOW, NEW HAMPSHIRE

ALTERNATIVES	ALTERNATIVE 1 VACUUM ENHANCED EXTRACTION AND PASSIVE RECOVERY TRENCH	ALTERNATIVE 2 BELT SKIMMERS AND PASSIVE RECOVERY TRENCH
CRITERION: EFFECTIVENESS		
Overall Protection of Human Health and the Environment	Will meet NTCRA objectives and be consistent with long-term remedial actions.	Same as alternative 1
	Bulk mobile LNAPL will be prevented from further migration into the Kelley Brook wetlands and the recoverable mobile product existing in the subsurface will be collected to remove the primary continuing source of groundwater contamination.	Same as alternative 1
Compliance with ARARs	Will comply with all identified ARARs.	Same as alternative 1
Long-term Effectiveness and Permanence	Residual risks will remain for portions of site unaddressed by removal action. Risks due to partitioning of LNAPL contaminants into groundwater will remain until the residual LNAPL is addressed. Remaining risks will be addressed in the Record of Decision, as appropriate.	Same as alternative 1.
Reduction of Toxicity, Mobility, or Volume Through Treatment	The toxicity, mobility, and volume of the recovered LNAPL (22,000 gallons) will be permanently reduced through off-site incineration. The volume of mobile LNAPL remaining on site will be significantly reduced. The residual LNAPL left after completion of the NTCRA will be immobile.	Same as alternative 1.
EFFECTIVENESS (cont.)		

TABLE 6
COMPARATIVE ANALYSIS OF REMOVAL ACTION ALTERNATIVES
ACTION MEMORANDUM
BEEDE WASTE OIL SITE
PLAISTOW, NEW HAMPSHIRE

ALTERNATIVES	ALTERNATIVE 1 VACUUM ENHANCED EXTRACTION AND PASSIVE RECOVERY TRENCH	ALTERNATIVE 2 BELT SKIMMERS AND PASSIVE RECOVERY TRENCH
Reduction of Toxicity, Mobility, or Volume Through Treatment (cont'd)	It is estimated that approximately 100,000 gallons of potentially contaminated groundwater will be extracted during the performance of the alternative. The groundwater will be treated and disposed at an off site facility	It is estimated that approximately 20,000 gallons of potentially contaminated groundwater will extracted during the performance of the alternative. The groundwater will be treated and disposed at an off site facility.
Short-term Effectiveness	Limited impacts to community, on-site workers, and environment. All impacts can be effectively mitigated through use of engineering controls and proper safety practices.	Same as alternative 1.
	Potential for VOCs and dust (VOCs, PCBs, metals) emissions during excavation and trench construction. Emissions monitoring and control measures will prevent or minimize potential problems.	Same as alternative 1.
	Increase in heavy vehicle traffic in site vicinity anticipated. Will be addressed through traffic control and coordination with community.	Same as alternative 1.
	Increased noise due to site construction activities. Will coordinate with community to lessen impacts (i.e., limit to normal working hours).	Same as alternative 1.
	Estimated duration of removal action: 5 to 9 months.	Estimated duration of removal action: 5 to 11 years.
CRITERION: IMPLEMENTABILITY		

TABLE 6
COMPARATIVE ANALYSIS OF REMOVAL ACTION ALTERNATIVES
ACTION MEMORANDUM
BEEDE WASTE OIL SITE
PLAISTOW, NEW HAMPSHIRE

ALTERNATIVES	ALTERNATIVE 1 VACUUM ENHANCED EXTRACTION AND PASSIVE RECOVERY TRENCH	ALTERNATIVE 2 BELT SKIMMERS AND PASSIVE RECOVERY TRENCH
Technical Feasibility	Trench installation and VEE system will be readily implementable and be technically feasible.	Same as alternative 1. Trench installation and belt skimmer system will be readily implementable and be technically feasible.
	Alternative 1will contribute to the site's long-term groundwater remedial action.	Same as alternative 1.
Administrative Feasibility	No permits for on-site work needed.	Same as alternative 1.
	Permits required for off-site disposal of LNAPL and groundwater.	Same as alternative 1.
	Will require coordination with NHDES, and with NH DOT and Plaistow officials on traffic controls.	Same as alternative 1.
Availability of Services and Materials	Qualified contractors will be available for competitive bidding.	Same as alternative 1.
	Off-site disposal capacity available for small waste quantity.	Same as alternative 1.
State Acceptance	NHDES has supported the proposed alternative (VEE).	NHDES has supported the proposed alternative (VEE).
Community Acceptance	The community supports the proposed VEE system, with sufficient noise controls.	The community supports the proposed VEE system, with sufficient noise controls.

TABLE 6
COMPARATIVE ANALYSIS OF REMOVAL ACTION ALTERNATIVES
ACTION MEMORANDUM
BEEDE WASTE OIL SITE
PLAISTOW, NEW HAMPSHIRE

ALTERNATIVES	ALTERNATIVE 1 VACUUM ENHANCED EXTRACTION AND PASSIVE RECOVERY TRENCH	ALTERNATIVE 2 BELT SKIMMERS AND PASSIVE RECOVERY TRENCH
CRITERION: **COST**		
CAPITAL COSTS	$1,108,000	$2,459,000
O&M $/yr	$ 573,000[1]	$ 202,000[2]
TOTAL PRESENT WORTH COST	**$2,458,016**	**$5,034,960**
COST SENSITIVITY ANALYSIS:		
Total Present Worth Cost: V = -30%	$2,132,000	$4,762,000
Total Present Worth Cost: V = +50%	$2,767,000	$5,734,000

(1) Estimated for 7 months
(2) Estimated for 8 years

TABLE 7
POTENTIAL CHEMICAL-SPECIFIC ARARs AND TBCs
FOR ALTERNATIVE 1 (VEE SYSTEM)
ACTION MEMORANDUM
BEEDE WASTE OIL SITE, PLAISTOW, NEW HAMPSHIRE

AUTHORITY	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	CONSIDERATION IN THE EE/CA
Federal Regulatory Requirements	THERE ARE NO FEDERAL CHEMICAL-SPECIFIC ARARS			
State Regulatory Requirements	THERE ARE NO STATE CHEMICAL-SPECIFIC ARARS			

TABLE 8
POTENTIAL LOCATION-SPECIFIC ARARs AND TBCs
FOR ALTERNATIVE 1 (VEE SYSTEM)
ACTION MEMORANDUM
BEEDE WASTE OIL SITE, PLAISTOW, NEW HAMPSHIRE

AUTHORITY	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTIONS TO BE TAKEN
Federal Regulatory Requirements	Protection of Wetlands (Executive Order 11990), 40 CFR 6.302(a) and 40 CFR 6, App. A (Policy on Implementing E.O. 11990)	Applicable	Federal agencies are required to avoid undertaking or providing assistance for new construction located in wetlands unless there is no practicable alternative and the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use.	Excavation or deposition of materials in the lagoon/ wetland system would include all practicable means of minimizing harm to wetlands. Wetlands protection consideration will be incorporated into the VEE system and trench extension design.
	Floodplain Management (Executive Order 11988, 40 CFR 6.302(b) and 40 CFR 6, App. A (Policy on Implementing E.O. 11988)	Applicable	Federal agencies are required to avoid impacts associated with the occupancy and modification of a floodplain and avoid support of floodplain development wherever there is a practicable alternative.	Installation of the VEE system is planned outside of the floodplain area. All practicable measures will be taken to minimize adverse effects on floodplain from installation of the trench extension.
	RCRA Floodplain Restrictions for Hazardous Waste Facilities (40 CFR 264.18(b))	Relevant and Appropriate	A hazardous waste facility located in a 100-year floodplain must be designed, constructed, operated, and maintained to prevent washout or to result in no adverse effects on human health or the environment if washout were to occur.	Installation of the VEE system is planned outside of the floodplain area. If the VEE system needs to be located in the portion of the site which is in the floodplain, its construction and operation will comply with these requirements.
	CWA - Dredge and Fill Regulations (40 CFR 230; 33 CFR 320-330)	Applicable	These regulations, also known as the CWA Section 404(b)(i) Guidelines, outline requirements for the discharge of dredged or fill materials into surface waters, including wetlands. Under these requirements, no activity that impacts a wetland shall be permitted if a practicable alternative which would have less adverse impact exists.	The trench must be located in the immediate area of the wetlands. Potential impacts to the wetland are unavoidable. Controls will be used to minimize adverse impacts to the wetlands during extension of the LNAPL recovery trench.
	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 take action to prevent, mitigate or compensate for project-related losses of fish and wildlife resources.	Controls will be used to minimize adverse impacts to the wetlands during extension of the LNAPL recovery trench. EPA will ensure that losses to fish and wildlife resources are prevented, mitigated or compensated and that the U.S. Fish and Wildlife Service will be consulted.

TABLE 8
POTENTIAL LOCATION-SPECIFIC ARARs AND TBCs FOR ALTERNATIVE 1 (VEE SYSTEM)
ACTION MEMORANDUM
BEEDE WASTE OIL SITE, PLAISTOW, NEW HAMPSHIRE

AUTHORITY	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTIONS TO BE TAKEN
Federal Regulatory Requirements (cont'd)	Endangered Species Act (16 USC 1531 et seq.; 40 CFR 6.302(h))	Applicable	This statute requires that Federal agencies avoid activities which jeopardize threatened or endangered species or adversely modify habitats essential to their survival. Mitigation measures should be considered if a listed species or habitat may be jeopardized.	Construction of the VEE collection and containment systems would be conducted to ensure that any listed species or habitat identified in the area of the site will not be adversely affected.
State Regulatory Requirements	Rules Relative to Prevention of Pollution from Dredging, Filling, Mining, Transporting, and Construction (Env-Ws 415)	Applicable	These rules establish criteria for the protection of surface water quality resulting from activities which significantly alter the terrain or occurs in or on the border of surface water.	Erosion and sedimentation controls will be utilized during all site preparation and construction activities to control runoff and protect surface water quality in Kelley Brook. Areas excavated will be backfilled and regraded.
	New Hampshire Criteria and Conditions for Fill and Dredge in Wetlands (Env-Wt 300)	Applicable	These regulations provide requirements for the dredge and/or fill of wetlands and establish criteria for protection of fish, wildlife, commerce, and public recreation. Under this requirement, no activity that impacts a wetland shall be permitted if a practicable alternative exists that would have less adverse impact on the areas and environments.	Minimal impacts anticipated from extension of the LNAPL recovery trench. No practical alternative to trench installation exists.
	New Hampshire Siting Requirements for Hazardous Waste Facilities (Env-Wm 353.09 and 353.10)	Relevant and Appropriate	These rules impose restrictions on where hazardous waste facilities can be located. Specifically locations near geologic fault areas, or in or near flood plains.	Installation of the VEE system is planned outside of the flood area. There are no known geologic fault areas on-site.
Criteria, Advisories, Guidance	U.S. EPA Memorandum, "Policy on Floodplains and Wetland Assessments for CERCLA Actions" (Aug. 6, 1985)	To Be Considered	This guidance discusses situations that require preparation of a floodplains or wetlands assessment, and the factors which should be considered in preparing an assessment, for response actions undertaken pursuant to section 104 or 106 of CERCLA.	This guidance was considered during the development, evaluation and selection of alternatives. A wetland delineation has been prepared in the immediate area of the trench to establish a baseline condition. No significant impact to the floodplain is anticipated.

TABLE 8
POTENTIAL LOCATION-SPECIFIC ARARs AND TBCs FOR ALTERNATIVE 1 (VEE SYSTEM)
ACTION MEMORANDUM
BEEDE WASTE OIL SITE, PLAISTOW, NEW HAMPSHIRE

AUTHORITY	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTIONS TO BE TAKEN
Criteria, Advisories, Guidance (continued)	Memorandum of Agreement (MOA) between EPA and the U.S. Department of the Army	To Be Considered	This notice provides clarification and general guidance regarding the level of mitigation necessary to demonstrate compliance with the Clean Water Act section 404(b)(1) Guidelines.	This guidance was considered during the development, evaluation and selection of alternatives. No significant impact to the wetland is anticipated. The need to mitigate wetland loss will be assessed in the Record of Decision.
	Guidance on Flexibility of the 404(b)(1) Guidelines	To Be Considered	This document provides guidance on the flexibility that the U.S Army Corps of Engineers should be utilizing when making determinations of compliance with the Section 404(b)(1) Guidelines, and guidance on the use of mitigation banks as a means of providing compensatory mitigation for Corps regulatory decisions.	This guidance will be considered during the development, evaluation and selection of alternatives. No significant impact to the wetland is anticipated. The need to mitigate wetland loss will be assessed in the Record of Decision.

TABLE 9
POTENTIAL ACTION-SPECIFIC ARARs AND TBCs
FOR ALTERNATIVE 1 (VEE SYSTEM)
ACTION MEMORANDUM
BEEDE WASTE OIL SITE, PLAISTOW, NEW HAMPSHIRE

AUTHORITY	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTIONS TO BE TAKEN
Federal Regulatory Requirements	RCRA - General Facility Standards (40 CFR 264 Subpart B)	Applicable	These regulations outline requirements for general waste analysis, security, inspections, personnel training, and handling of ignitable, reactive or incompatible wastes for hazardous waste facilities.	The VEE system will be constructed, fenced, posted and operated in accordance with this requirement. All workers will be properly trained. Process wastes will be evaluated for the characteristics of hazardous wastes to assess further handling requirements.
	RCRA - Preparedness and Prevention (40 CFR 264 Subpart C)	Applicable	The regulations in this subpart outline requirements for the safe design and operation of a facility, safety equipment, and communication systems for RCRA hazardous waste facilities.	The VEE system will be designed, constructed, maintained, and operated in compliance with these safety requirements.
	RCRA Requirements for Hazardous Waste Tank Systems (40 CFR 264 Subpart J)	Applicable	These regulations specify the design, installation, operation, monitoring, inspection, contingency plan, and closure requirements for the storage or treatment of hazardous waste using a tank system.	Tank systems for storage of liquids (i.e., oil and water) will comply with these requirements and are anticipated to be disposed of at a frequency not to exceed 90 days.
	RCRA Operator Requirements (40 CFR 262.34 and 270.1)	Applicable	These regulations specify storage requirments for operators of RCRA TSDFs, where liquid wastes will be stored in a tank system for more than 90 days.	It is anticipated that liquid wastes (i.e., oil and water) will be stored in a temporary on-site tank system for a period not to exceed 90 days. If waste must be stored beyond 90 days, the tank system will be modified to comply with 40 CFR 264.
	RCRA Requirements for Hazardous Waste Piles (40 CFR 264 Subpart L, Section 264.251(c), and Section 264.251 (d))	Applicable	These regulations identify design, operating, monitoring, closure, and post-closure requirements for the storage or treatment of RCRA hazardous waste in piles created after January, 1992. The EPA Regional Administrator may approve alternate design and operating practices if they provide a sufficiently similar level of protection.	Waste piles used for storage of LNAPL-contaminated soils will be managed in compliance with these requirements. Specifically, the stored soil will be placed in a bermed area on a double-liner and coved with a tarpaulin. Alternate operating practices may be considered in the final design.

TABLE 9
POTENTIAL ACTION-SPECIFIC ARARs AND TBCs FOR ALTERNATIVE 1 (VEE SYSTEM)
ACTION MEMORANDUM
BEEDE WASTE OIL SITE, PLAISTOW, NEW HAMPSHIRE

AUTHORITY	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTIONS TO BE TAKEN
Federal Regulatory Requirements (Continued)	RCRA 40 CFR 264 Subpart AA, Air Emission Standards for Process Vents	Relevant and Appropriate	This regulation contains air pollutant emission standards for process vents, closed-vent systems, and control devices at hazardous waste TSD facilities. This subpart applies to equipment associated with solvent extraction or air/steam stripping operations that treat wastes that are identified or listed RCRA hazardous wastes and have a total organics concentration of 10 ppm or greater.	These standards will be considered during the design of the LNAPL collection systems. Air emissions from the VEE treatment unit will be monitored to ensure compliance with this requirement.
	RCRA 40 CFR 264 Subpart BB, Air Emission Standards for Equipment Leaks	Relevant and Appropriate	This regulation contains air pollutant emission standards for equipment leaks at hazardous waste TSD facilities. This subpart applies to equipment that contains or contacts hazardous wastes with organic concentrations of at least 10 percent by weight.	A leak detection and repair program will be included to monitor for leaks from the LNAPL collection and moisture separator systems. If equipment leaks occur during treatment, the response will be in conformance with this regulation.
	TSCA 40 CFR 761.65(c)(1) and 761.61(c), Storage and Disposal of Liquid PCB Remediation Waste	Applicable	These regulations address the storage and disposal requirements for the remediation of PCB wastes at facilities where liquids have been contaminated by a PCB spill. Generally, liquid wastes must be disposed of within 30 days. The EPA Regional Administrator can approve alternate storage and disposal methods consistent with the "risk-based option."	PCB contaminated oil and water generated from the recovery trench and VEE system will be stored in compliance with the "risk-based option" requirements. If practical, PCB oil and water will be disposed of at a frequency not to exceed 30 days.
	TSCA - 40 CFR 761.65(c)(9) and 761.61(c), Storage and Disposal of Bulk PCB Remediation Waste	Applicable	This regulation allows for the temporary storage of bulk PCB remediation wastes, for a duration not to exceed 180 days. The EPA Regional Administrator can approve alternate storage and disposal methods consistent with the "risk-based option.".	Contaminated soils containing PCBs in excess of 50 ppm will be stored on-site, in accordance with this regulation, for treatment under the planned ROD. It is anticipated that the duration of storage will exceed one year, and therefore will be stored in compliance with the "risk-based option" requirements..

TABLE 9
POTENTIAL ACTION-SPECIFIC ARARs AND TBCs FOR ALTERNATIVE 1 (VEE SYSTEM)
ACTION MEMORANDUM
BEEDE WASTE OIL SITE, PLAISTOW, NEW HAMPSHIRE

AUTHORITY	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTIONS TO BE TAKEN
Federal Regulatory Requirements (Continued)	CAA - National Emissions Standards for vinyl chloride (40 CFR 61 Subpart F)	Relevant and Appropriate	Although promulgated prior to the 1990 amendments to the CAA, these regulations remain in effect as part of the National Emission Standards for Hazardous Air Pollutant (NESHAPs). These regulations detail emission standards and monitoring requirements for the emission of ethylene chloride, vinyl chloride and polyvinyl chloride from stationary sources.	Air emissions from the extraction of LNAPL will be monitored to ensure compliance with this requirement.
State Regulatory Requirements	New Hampshire Abandonment of Well Rules (We 604)	Applicable	These requirements regulate well closure.	If groundwater wells must be abandoned during construction of the VEE collection and containment system, these closure requirements will be met.
	New Hampshire Hazardous Waste Rules (Env-Wm 100-1000)	Applicable	These regulations identify requirements for generating, transporting, storing, recycling, and disposing of hazardous wastes.	Extraction, storage, transportation, and disposal of LNAPL and groundwater will be conducted in compliance with these regulations. Actions to be taken are listed separately below.
	New Hampshire Environmental and Health Requirements (Env-Wm 702.08)	Applicable	These rules require operator of a hazardous waste facility to meet environmental standards for surface water, groundwater, and air.	Storage and disposal of contaminated materials will be conducted to meet the applicable environmental standards.
	New Hampshire General Design Requirements (Env-702.08)	Applicable	All hazardous waste treatment and transfer facilities are to meet specific design requirements.	LNAPL extraction and storage facilities will be designed in accordance with these requirements.

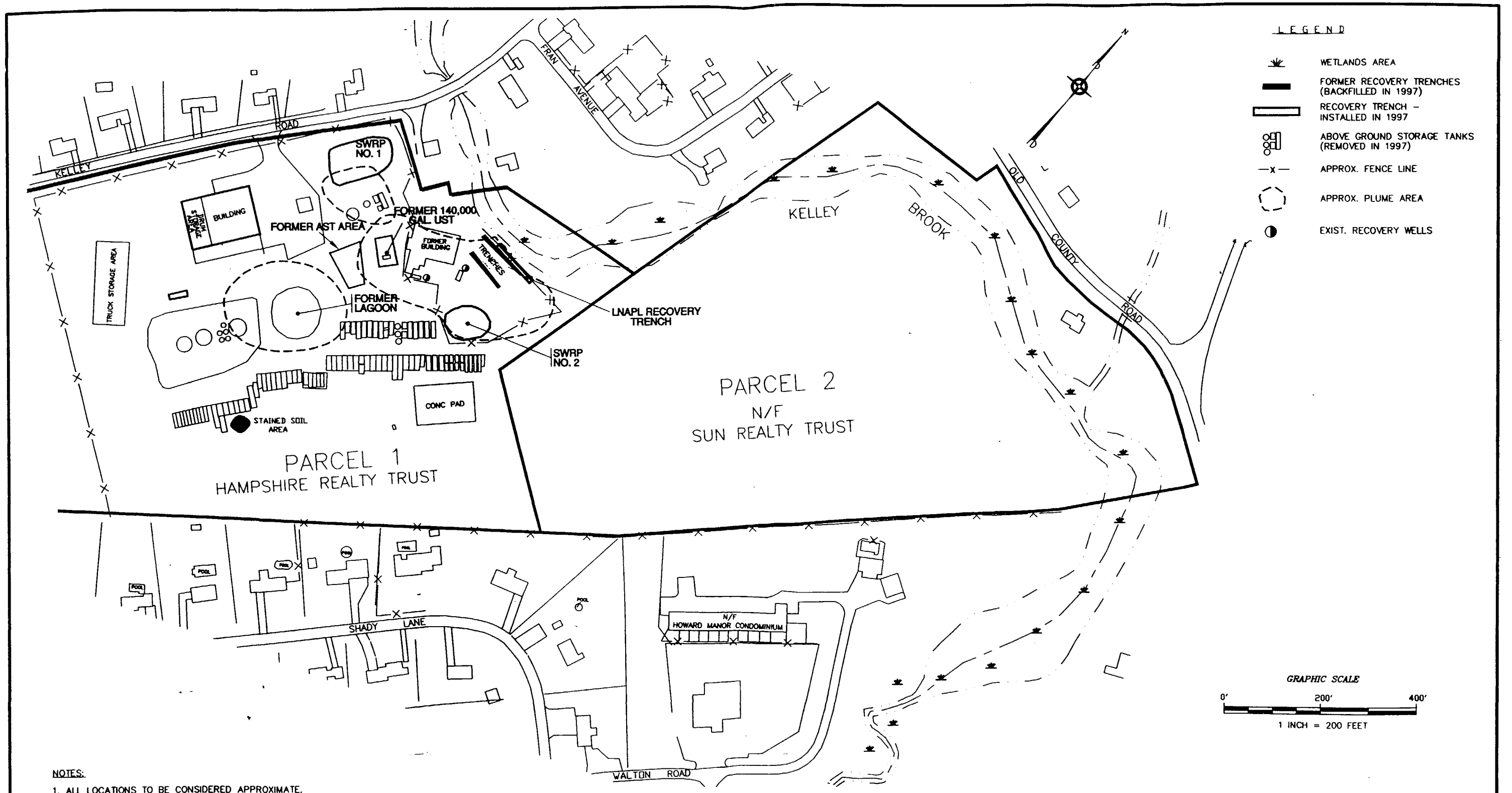
TABLE 9
POTENTIAL ACTION-SPECIFIC ARARs AND TBCs FOR ALTERNATIVE 1 (VEE SYSTEM)
ACTION MEMORANDUM
BEEDE WASTE OIL SITE, PLAISTOW, NEW HAMPSHIRE

AUTHORITY	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTIONS TO BE TAKEN
State Regulatory Requirements (continued)	New Hampshire Monitoring of Hazardous Waste Treatment Facilities (Env-Wm 702.10-702.13)	Applicable	The regulations specify requirements for installation and operation of one or more of the following monitoring systems: • Groundwater monitoring network • Air emission monitoring network • Leachate monitoring network	Air emission monitoring networks consistent with these requirements will be developed and implemented to monitor air emissions from the VEE LNAPL collection system.
	New Hampshire General Operation Requirements (Env-Wm 708)	Applicable	These rules establish requirements for hazardous waste facility operation.	LNAPL extraction and storage facilities will be operated in accordance with these requirements.
	New Hampshire Toxic Air Pollutants (Env-A 1300)	Relevant and Appropriate	These rules establish Ambient Air Limits (AALs) and air quality impact analyses to protect the public from concentrations of pollutants in ambient air that may cause adverse health effects. If AALs are not met, then corrective action, which may include Best Available Control Technology or Reasonably Available Control Technology, shall be implemented to meet the AALs.	Air monitoring will be performed during installation of the trench extension, extraction wells and VEE system operation. On-site actions will be implemented, if necessary, to prevent exceedance of the AAL.
	New Hampshire Testing and Monitoring Procedures (Env-A 805)	Relevant and Appropriate	These regulations identify requirements for air emission testing for stationary sources which are subject to opacity and/or emission limits.	During performance of the VEE system, air emissions will be monitored pursuant to these requirements to ensure that applicable standards are not exceeded.
	New Hampshire Fugitive Dust Control (Env-A 1002)	Applicable	These regulations require precautions to prevent, abate, and control fugitive dust during specified activities, including excavation, construction, and bulk hauling.	Fugitive dust emissions will be controlled during installation of the trench and extraction wells.

TABLE 9
POTENTIAL ACTION-SPECIFIC ARARs AND TBCs FOR ALTERNATIVE 1 (VEE SYSTEM)
ACTION MEMORANDUM
BEEDE WASTE OIL SITE, PLAISTOW, NEW HAMPSHIRE

AUTHORITY	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTIONS TO BE TAKEN
	New Hampshire Emergency Procedures (Env-A 505.02 and 506.02)	Applicable	The regulations impose obligations on sources of air pollution in emergency situations.	The VEE system will comply with state directives in the event of "warning" and/or "emergency" status.
Criteria, Advisories, Guidance	OSWER Directive 9355.0-28, Air Stripper Control Guidance	To Be Considered	Guidance regarding use of air emission controls at CERCLA sites.	This guidance was considered during the selection and design of alternatives. Appropriate air emissions controls will utilized in the final VEE system design.
	OSWER Directive 9355.4-01, August, 1990. Guidance on Remedial Actions atSuperfund Sites With PCB Waste.	To Be Considered	EPA guidance regarding the remediation of Superfund sits which contain TSCA waste.	This guidance was reviewed and complied with in development of this Action Memorandum.

FIGURES



NOTES:

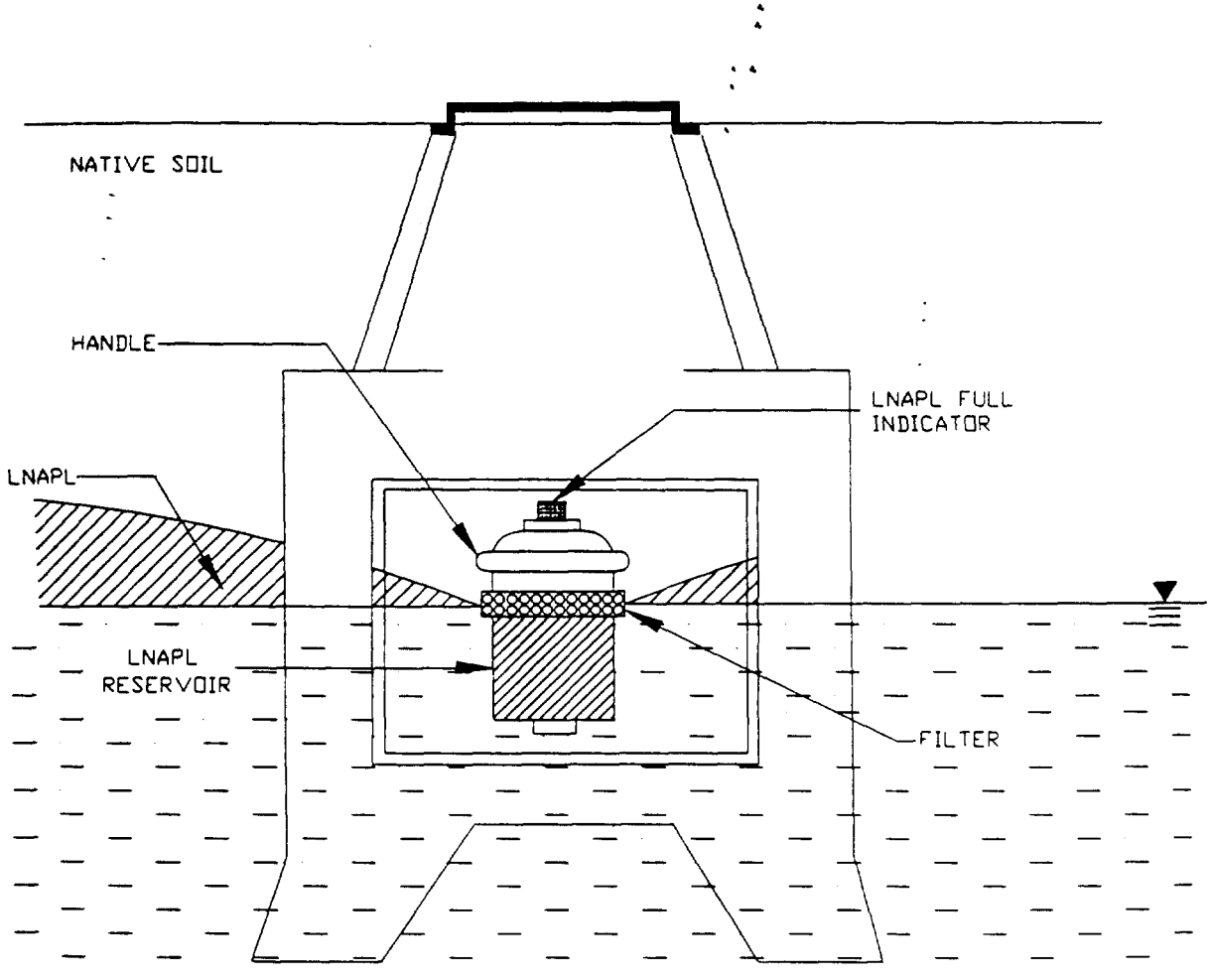
1. ALL LOCATIONS TO BE CONSIDERED APPROXIMATE.
2. PLAN NOT TO BE USED FOR DESIGN.
3. BASE PLAN COMPILED FROM PLAN PROVIDED BY THE CITY OF PLAISOW, NH MAKING REFERENCE TO A PLAN ENTITLED "TOPOGRAPHIC PLAN OF LAND IN PLAISTOW, NH", PREPARED BY ANDOVER CONSULTANTS, SCALE: 1"=100', DATED: FEBRUARY, 1991. PARCEL 2 DRAWN FROM A PLAN ENTITLED: " TOPOGRAPHIC WORKSHEET OF A PARCEL IN PLAISTOW, NH" PREPARED BY EASTERN TOPOGRAPHICS, SCALE: 1"=40', DATED: JANUARY, 1990 AND A PLAN LABELLED: "U.S. ARMY CORPS OF ENGINEERS, U.S. ENVIRONMENTAL PROTECTION AGENCY, SITE NAME: BEEDE WASTE OIL, CITY NAME: PLAISTOW, NH, ... PROJECT NO. 1NH4251030710612, DATE OF PHOTOGRAPHY: MAY 07, 1996, DATE OF PREPARATION: FEBRUARY 1997, SCALE: 1"=300', CONTOUR INTERVAL: 2'.

SITE FEATURES MAP
BEEDE WASTE OIL SITE
PLAISTOW, NEW HAMPSHIRE

DRAWN BY:	R.G. DEWSNAP	REV.:	0
CHECKED BY:	D. McKENNA	DATE:	04 MAY 98
SCALE:	1" = 200'	FILE NO.:	\DWG\BEEDE\FIG_1-2B.DWG

FIGURE 1

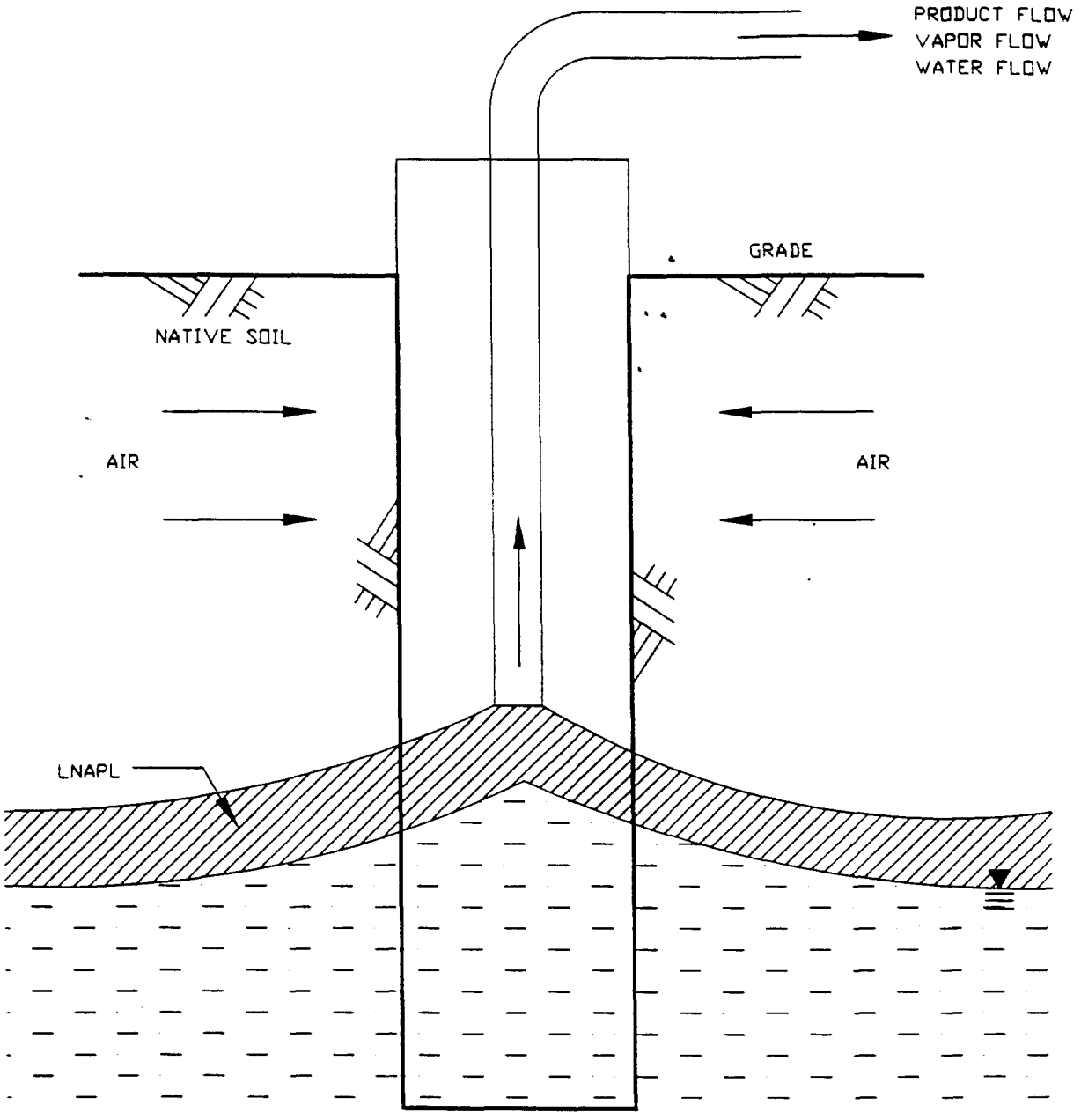
Brown & Root Environmental
55 Jonspin Road Wilmington, MA 01887
(978)658-7899



NOTES:

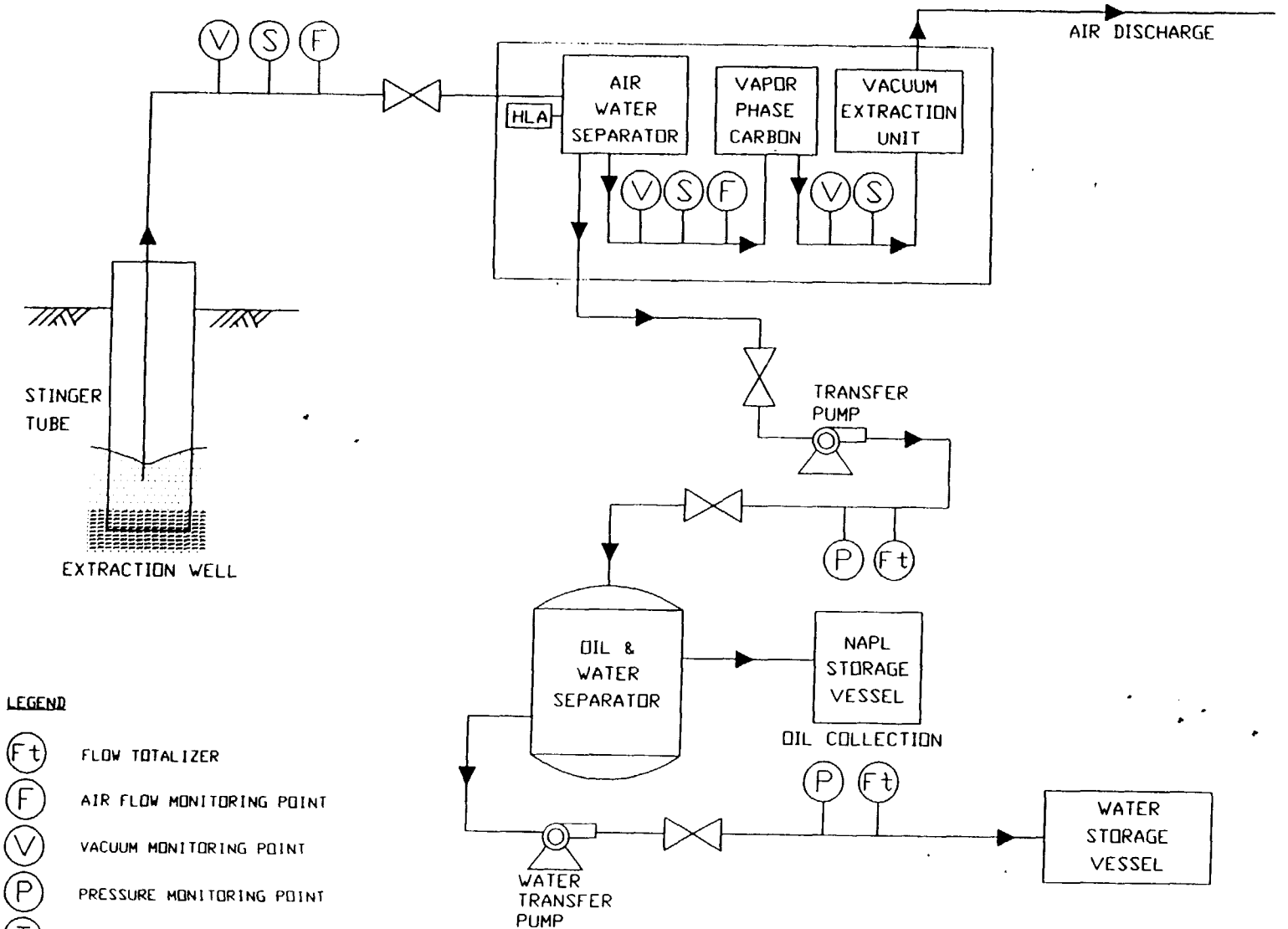
PASSIVE TRENCH SKIMMER			FIGURE 2
BEEDE WASTE OIL			
PLAISTOW, NEW HAMPSHIRE			
DRAWN BY:	D.W. MACDOUGALL	REV.:	0
CHECKED BY:	B. SANDA	DATE:	05 MAY 98
SCALE:	NOT TO SCALE	ACAD NAME:	DWG\BEEDE\TREAT\REPORT\FIG_4-3A

Brown&RootEnvironmental
55 Jonspin Road Wilmington, MA 01887
(978)658-7899



WELL DETAIL VACUUM ENHANCED EXTRACTION	FIGURE 3
BEEDE WASTE OIL	
PLAISTOW, NEW HAMPSHIRE	
DRAWN BY: D. MACDOUGALL / R. DEWSNAP	REV.: 0
CHECKED BY: D. CONAN	DATE: 05 MAY 98
SCALE: NOT TO SCALE	ACAD NAME: DWG\BEEDE\TREAT\REPORT\FIG_4-4

Brown & Root Environmental
55 Jonspin Road Wilmington, MA 01887
(978)658-7899



PROCESS FLOW DIAGRAM		FIGURE 4
VACUUM ENHANCED EXTRACTION		
BEEDE WASTE OIL – PLAISTOW, NEW HAMPSHIRE		
DRAWN BY: D. MACDOUGALL / R. DEWSNAP	REV.: 0	
CHECKED BY: D. CONAN	DATE: 05 MAY 98	
SCALE: NOT TO SCALE	FILE NO.: DWG\BEEDE\TREAT\REPORT\FIG_4-5A	

Brown & Root Environmental
55 Jonspin Road Wilmington, MA 01887
(978)658-7899

APPENDIX 1

BEEDE WASTE OIL SUPERFUND SITE
Plaistow, New Hampshire
Approval Memorandum
Executive Summary - August 30, 1996

Attached is an Approval Memorandum to Perform an Engineering Evaluation Cost Analysis for a Non-Time Critical Removal Action (NTCRA) at the Beede Waste Oil Site located in Plaistow, New Hampshire. Finalization of the Site on the NPL is expected this fall.

In previous meetings, it was determined that the approach for the Beede investigation and cleanup will be phased and include three primary components as explained below:

1) ***96/3, Emergency Removal, $1 million*** - This action will be completed by the Emergency Removal Branch of OSRR and include the characterization and removal of all hazardous bulk liquids currently stored in ASTs and drums on Site. This action began on July 31 and will take three months to complete.

2) ***96/4, NTCRA, $1- 2 million*** - This action will be completed by the Remedial Branch of OSRR and will require preparation of an Engineering Evaluation and Cost Analysis (EECA) and funding approval by the prioritization panel. The scope of work will involve the extraction and remediation of floating product (LNAPL) throughout the Site which is a continuing source of on and off-Site groundwater contamination. An Approval Memorandum is currently being prepared.

3) ***96/4, RI/FS, $1.9 million*** - This action will be delegated to the State of NH as the lead authority through a Cooperative Agreement. The State will procure their own contractor to conduct the RI, FS and risk assessment. The Cooperative Agreement is currently under EPA review.

The attached Approval Memorandum addresses component number two and will mitigate the continued release of contaminants from the LNAPL plume to groundwater. If approved, an EECA will be prepared by a RACS contractor, Brown & Root, at an estimated cost of approximately $50,000 (RI fund). The funding source and level for the NTCRA itself will be determined by the prioritization panel. Cost estimates are in the $1 to $2 million range.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I - HBO
J.F. KENNEDY FEDERAL BUILDING, BOSTON, MA 02203-2211

MEMORANDUM

DATE: August 30, 1996

SUBJ: Approval Memorandum to Perform an Engineering Evaluation Cost Analysis for a Non-Time Critical Removal Action - Beede Waste Oil Site, Plaistow, NH

FROM: Jim DiLorenzo, RPM JMD

TO: Linda M. Murphy, Director
Office of Site Remediation and Restoration

THRU: Larry Brill, Chief RCB for Larry Brill
Office of Site Remediation and Restoration I

Don Berger, Chief
Emergency Planning and Response Branch

I. Subject

On going investigations have determined that there has been a release of hazardous substances to the environment at the Beede Waste Oil Site (Beede Site or Site) located in Plaistow, New Hampshire.

This memorandum documents the decision to proceed with an Engineering Evaluation Cost Analysis (EECA) for a Non-Time Critical Removal Action (NTCRA) at the Beede Site. The EECA will be limited to evaluating alternatives for control of contaminant sources at the Site. The decision to proceed with an EECA is consistent with EPA guidance regarding Superfund Accelerated Cleanup Model (SACM) early actions.

This memorandum is not a final Agency decision regarding the selection of a removal action for this Site.

II. Background

A. Site Description

The Beede Waste Oil Site is located at 7 Kelley Road in Plaistow, New Hampshire. The Site is comprised of several parcels of land totaling 39 acres. Parcel 1 housed the former commercial operations, totals 22 acres and is currently zoned commercial - industrial.

Parcel 2 is zoned for residential development and contains 17 acres of primarily undeveloped land, with the exception of a single family home located on the extreme southern corner of the property. The Site is surrounded primarily by single family homes. Several multi-family buildings and small businesses are also located adjacent to, or in the immediate vicinity of the Site. All residences and businesses in the Town of Plaistow rely on private wells for their water supply.

Located on Site are approximately 100 above ground storage tanks (ASTs) and one underground storage tank (UST). The Site contains two buildings. A newer 10,000 sqft commercial building was used as office space, vehicle maintenance and has an attached 4,000 sqft canopied drum storage area. An older 6,000 sqft commercial building was used for antifreeze recycling, vehicle maintenance, and office and storage space. The older building is structurally unsound.

B. Site History

Commercial operations, including recycling of used oil, and storage and distribution of virgin fuel oil reportedly started in 1926 and continued until 1994. Kelley Brook, a tributary of the Merrimack River, runs through a portion of the Site.

In October 1983 chemical contamination was discovered in a residential well near the Site. The well was taken out of service and an alternate water supply was provided. In response the Site owner, Cash Energy, Inc., contracted Groundwater Technology in February 1994 to investigate groundwater quality in the area. Three monitoring wells were installed and sampled for organic compounds. Results concluded that chlorinated organic compounds were present at total concentrations as high as 3,425 ppb. Groundwater Technology recommended the installation of additional monitoring wells and the initiation of a pump and treat system.

In July 1990, the New Hampshire Department of Environmental Services (NHDES) issued the Beede Waste Oil Co. a temporary permit to process virgin petroleum contaminated soil into cold mix asphalt pavement. During a Site inspection in 1991, the NHDES noted permit violations and required the Beede Waste Oil Co. to cease asphalt activities. In response, the company owner, Cash Energy, Inc., ceased operations and removed three underground storage tanks. The site of the former 140,000 gallon UST was heavily stained. In addition, Cash Energy, Inc. contracted Aries Engineering, Inc. to conduct a petroleum release assessment to evaluate Site soil and groundwater conditions consistent with State regulation. In a report released in September 1991, Aries documented that: 1) total petroleum hydrocarbons were found in on-site soils at concentrations as high as 89,000 mg/kg; 2) total chlorinated organic compounds in on-site groundwater ranged in concentration from 128 ppb to 8,430 ppb; 3) free-product or light non-aqueous phase liquids (LNAPL), chlorinated organic compounds were present

at concentrations ranging from 51,100 ppm to 203,600 ppm; and 4) chlorinated organic compounds were also present in surface water from Kelley Brook. Aries recommended that a free product recovery system be installed and that on-site and off-site groundwater be monitored on a regular basis.

Aries conducted some additional hydro geologic studies and issued a subsequent report in November 1991 which verified that on-site soil and groundwater was acting as a source of contamination to abutting residential supply wells. Also during 1991, Aries conducted test pit excavations and a ground penetrating radar survey which focussed on the area of the former 140,000 gallon UST.

In February 1992, seepage of LNAPL into Kelley Brook was discovered. The New Hampshire Department of Environmental Services (DES) has contained the discharge using booms and sorbents. EPA considered using the Oil Spill Liability Trust Fund to install a recovery system which would contain the discharge, however, samples collected from monitoring wells on Site have been found to contain PCBs and VOCs at significant concentrations. Therefore, due to the release of hazardous substances, it is appropriate to use CERCLA as the response authority. As a continuing source of groundwater contamination, the LNAPL plume is the focus of this proposed non-time critical removal action.

Since the Beede Waste Oil Co. did not respond to subsequent orders to initiate cleanup activities, in March 1995 the NHDES procured a contractor to investigate source areas and the hydrology of the Site.

III. Threat to Public Health, Welfare, or the Environment

Section 300.415(b)(2) of the National Contingency Plan (NCP) lists a number of factors for EPA to consider in determining whether a removal action is appropriate. These factors are:

(i) Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants;
(ii) Actual or potential contamination of drinking water supplies or sensitive ecosystems;
(iii) Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release;
(iv) High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate;
(v) Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released;
(vi) Threat of fire or explosion;

(vii) The availability of other appropriate federal or state response mechanisms to respond to the release; and
(viii) Other situations or factors that may pose threats to public health or welfare or the environment.

An evaluation of the conditions at the Beede Site conclude that factors (i), (ii), (iv) and (vii) are applicable as described below.

(i) *Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants* - Direct human exposure to the LNAPL plume is unlikely except in an isolated area of the property where a portion of the plume does extend, and periodically discharge, to the surface water of Kelley Brook. Exposure to animals is likely at the point of discharge as is the potential for human exposure through the consumption of fish from Kelley Brook. The potential for both human and animal exposure may increase if the plume is allowed to continue discharge to Kelley Brook.

(ii) *Actual or potential contamination of drinking water supplies or sensitive ecosystems* - The presence of the LNAPL plume floating on groundwater is likely an ongoing source of VOC contamination in on-Site groundwater and off-Site residential supply wells. Several supply wells have detectable levels of VOC contamination. Two residential supply wells exhibit VOC contamination at levels which required the State to provide point-of-use treatment systems because of excessive risk. Additionally, the LNAPL plume is an ongoing source of periodic discharge to Kelley Brook which, if allowed to continue, may result in additional VOC or PCB contamination of surface water, sediment and/or the entire ecosystem.

(iv) *High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate* - Migration of hazardous substances from the LNAPL plume has already been observed and documented by (a) discharge of the plume to and presence of VOC contamination in Kelley Brook and (b) presence of VOC contamination in off-Site residential wells. The LNAPL plume itself contains high concentrations of both VOCs and PCBs in the ppm range. Although these high concentrations of VOCs and PCBs have not been exhibited in residential wells or Kelley Brook, the LNAPL plume remains a potential source of significant contamination as it continues to migrate.

(vii) *The availability of other appropriate federal or state response mechanisms to respond to the release* - There are no other known federal or state funds or response mechanisms available to finance this action. Initially, EPA considered responding to the Kelley Brook release using the Oil Spill Liability Trust Fund, however subsequent sampling determined that elevated quantities of hazardous materials are present in the

LNAPL plume.

These factors demonstrate that current Site conditions are a continuing source of groundwater and possibly surface water contamination and meet the NCP criteria for a CERCLA NTCRA. This release has resulted in elevated concentrations of VOCs in adjacent residential supply wells. There is also a potential for PCB migration and impact to Kelley Brook.

Consequently, based upon the NCP factors listed above, a potential threat exists to public health or welfare or the environment. A NTCRA is therefore appropriate to abate, prevent, minimize, stabilize, mitigate, or eliminate such threat(s). Specifically, a NTCRA is necessary to (1) remove the LNAPL plume(s) to prevent further contamination of groundwater contamination and (2) prevent discharge of the LNAPL plume to Kelley Brook.

This removal action is designated non-time critical because more than six months planning time is available before on-site activities must be initiated. As a result, EPA is required to complete an engineering evaluation and cost analysis (EECA) pursuant to 40 CFR §300.415(b)(4).

IV. Scope of the Proposed EECA

The purpose of the EECA is to evaluate alternatives for source remediation of the LNAPL plume. The EECA will consider alternatives which will meet the following removal objectives:

- prevent further release of LNAPL contaminants to the groundwater; and
- prevent further discharge of the LNAPL plume to Kelley Brook.

Pursuant to EPA guidance on performing EECAs, alternatives will be evaluated based upon relative effectiveness, implementability, cost and compliance with ARARs to the extent practicable.

V. Estimated Costs

The EECA for the proposed NTCRA at the Beede Site will be developed by an EPA contractor under the Response Action Contracts (RACs) program. The EPA contractor will also be responsible for procurement and oversight of the response contractor.

Extramural costs associated with the preparation of an EECA for the Beede Site, including community relations activities and development of an Administrative Record,

are expected to be less than $50,000. Based on EPA estimates, costs associated with the response action will be in the $1 to $2 million range.

VI. Enforcement Strategy

The PRPs have been unwilling or unable to respond in a satisfactory manner to EPA and NHDES orders to conduct necessary investigation and cleanup activities.

AN ENFORCEMENT STRATEGY SUMMARY IS ATTACHED TO THIS DOCUMENT FOR INTERNAL DISTRIBUTION ONLY.

VII. Other Considerations

- The proposed NTCRA is consistent with anticipated remedial actions. The LNAPL plume is the most likely source of on-site and off-site groundwater contamination. The State's Groundwater Protection Strategy (ws-410) requires the treatment or removal of all sources of groundwater contamination. Under the Remedial Program, portions of ws-410 are applicable and would require the removal and treatment of the LNAPL plume.

- Contaminate levels in several area residential wells appear to exhibit increasing trends. Two wells, one which serves a small condominium complex and another which jointly serves a residence and a small business, have exceeded MCLs which required the installation of point-of-use treatment systems by the NHDES. There is no public water system in Plaistow or the neighboring New Hampshire communities.

- The proposed NTCRA is one part of a three phased approach to address concerns at the Beede Site. The other two components are (1) the EPA time-critical removal action which is currently ongoing to remove bulk hazardous materials and (2) the Remedial Investigation/Feasibility Study to fully characterize the Site is planned to begin this fall.

VIII. Schedule

It is anticipated that the EECA will be completed within three months including any necessary additional testing. The EECA will form the basis of an Action Memorandum which will document the cleanup approach. Procurement of the response action contractor and construction of the NTCRA will begin immediately following approval of the Action Memorandum. The duration of treatment necessary is unknown and will be determined in the EECA.

The anticipated schedule for all Site activities is included in the table below. Activities relating to this proposed action are indicated by shading.

ACTIVITY	PLANNED START	PLANNED COMPLETION
Time-Critical Removal	began July 1996	November 1996
Cooperative Agreement Approval for RI/FS	August 1996	September 1996
EECA	September 1996	January 1997
RI/FS Workplan Development	September 1996	November 1996
Action Memorandum	January 1997	March 1997
Remedial Investigation (RI)	January 1997	March 1998
NTCRA Contractor Procurement	March 1997	June 1997
NTCRA	June 1997	unknown
Feasibility Study (FS)	March 1998	June 1998
Record of Decision	June 1998	September 1998

IX. Recommendation

Ongoing investigations have determined that there has been a release of hazardous substances to the environment. Consistent with Section 104(b) of CERCLA, further investigation is necessary to plan and direct future response actions. We recommend your approval of the engineering evaluation and cost analysis (EECA) request. The estimated total extramural cost of performing the EECA is $50,000.

Approve: Linda M. Murphy

Date: August 30, 1996

APPENDIX 2

BEEDE WASTE OIL

Non-Time Critical Removal Action
Administrative Record

INDEX

Compiled: June 17, 1998

Prepared By
EPA - New England
Office of Site Remediation and Restoration

With Assistance From
ads
2070 Chain Bridge Road
Vienna, VA 22182

INTRODUCTION

This document is the Index to the Administrative Record compiled for the Non-Time Critical Removal Action at the Beede Waste Oil Superfund Site, Plaistow, NH. The Citations in the Index are for the documents that the EPA staff used in the process for selecting the response action at the Site. Site Specific documents are cited in Section I of the Index, and EPA guidance documents are cited in Section II.

The Administrative Record is available for public review at EPA Region I Office of Site Remediation and Restoration (OSRR) Records Center, 90 Canal Street, Boston, MA 02114. [(617) 573-5729], and at the Plaistow Public Library, 14 Elm Street, Plaistow, NH 03865 [603) 382-6011]. The Staff of the OSRR Records Center recommends that you set up an appointment prior to your visit.

The documents cited in Section I of the Index are arranged in the Administrative Record in order of the document number included at the end of each citation in the Index. The EPA guidance documents cited in Section II are available for review only at the OSRR Records Center.

Questions concerning the Administrative Record should be addressed to the EPA project manager for the Beede Waste Oil Superfund Site.

An Administrative Record is required by the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorizaton Act (SARA).

BEEDE WASTE OIL
NON-TIME CRITICAL REMOVAL

Volume Number	Document Number
Volume I	Documents 000001 - 000010
Volume II	Documents 000012 - 000018, Documents 000020 - 000036

SECTION I

SITE - SPECIFIC DOCUMENTS

02.01 **REMOVAL RESPONSE - CORRESPONDENCE**

Title:	Jan 31, 1997 Meeting With Paul Currier, Diane McKenna, and Chip Crocetti		
Authors:	JIM DILORENZO - EPA - REGION I		
Date:	January 31, 1997		
Format:	CORRESPONDENCE	No. Pgs:	1
AR No.	02.01.1	Document No.	000001

Title:	Summary of Meeting. January 31, 1997, Beede Waste Oil Site, EE/CA, RAC I W.A. No. 005-NSEE-011T		
Addressee:	JIM DILORENZO - EPA - REGION I		
Authors:	DIANE MCKENNA - BROWN & ROOT ENVIRONMENTAL		
Date:	February 4, 1997		
Format:	LETTER	No. Pgs:	3
AR No.	02.01.2	Document No.	000002
*Attached	to Document No. 000001 In 02.01		

Title:	April 4, 1997 Meeting: BR Conference Call		
Authors:	JIM DILORENZO - EPA - REGION I		
Date:	April 4, 1997		
Format:	LETTER	No. Pgs:	2
AR No.	02.01.3	Document No.	000005

Title:	Proposed Agenda: Beede Waste Oil Site Discharge Issues Meeting		
Addressee:	JIM DILORENZO - EPA - REGION I		
Authors:	DIANE MCKENNA - BROWN & ROOT ENVIRONMENTAL		
Date:	April 15, 1997		
Format:	LETTER	No. Pgs:	2
AR No.	02.01.4	Document No.	000003

Title:	March 26, 1997 Meeting with Charlie Porfert and Andy Bellaveau		
Authors:	JIM DILORENZO - EPA - REGION I		
Date:	March 26, 1998		
Format:	LETTER	No. Pgs:	1
AR No.	02.01.5	Document No.	000004

02.02 REMOVAL RESPONSE - REMOVAL RESPONSE REPORTS

Title:	Beede Waste Oil Superfund Site, Plaistow, NH: Approval Memorandum: Executive Summary - August 30, 1996		
Addressee:	LINDA MURPHY - EPA - REGION I		
Authors:	JIM DILORENZO - EPA - REGION I		
Date:	August 30, 1996		
Format:	MEMORANDUM	No. Pgs:	8
AR No.	02.02.1	Document No.	000006

Title:	LNAPL Recovery Treatability Study and Field Investigation Report: Response Action Contract (RAC) - Region I		
Addressee:	EPA - REGION I		
Authors:	BROWN & ROOT ENVIRONMENTAL		
Date:	April 1998		
Format:	REPORT, STUDY	No. Pgs:	261
AR No.	02.02.2	Document No.	000008

Title:	Review of Draft Engineering Evaluation/Cost Analysis Report: Beede Waste Oil Superfund Site, Plaistow, NH		
Addressee:	DIANE MCKENNA - BROWN & ROOT ENVIRONMENTAL		
Authors:	C. WAYNE IVES - NH DEPARTMENT OF ENVIRONMENTAL SERVICES		
Date:	May 29, 1998		
Format:	LETTER	No. Pgs:	2
AR No.	02.02.3	Document No.	000009

Title:	Review of Draft Engineering Evaluation/Cost Analysis Report, Beede Waste Oil Superfund Site		
Addressee:	DIANE MCKENNA - BROWN & ROOT ENVIRONMENTAL		
Authors:	JIM DILORENZO - EPA - REGION I		
Date:	May 29, 1998		
Format:	LETTER	No. Pgs:	5
AR No.	02.02.4	Document No.	000010

Title: Engineering Evaluation/ Cost Analysis - Response Action Contract (RAC)- Region I
Addressee: EPA - REGION I
Authors: BROWN & ROOT ENVIRONMENTAL
Date: June 1998
Format: REPORT, STUDY No. Pgs: 215
AR No. 02.02.5 Document No. 000036

02.03 REMOVAL RESPONSE - SAMPLING & ANALYSIS DATA

Title: Transmittal of Draft Sampling and Analysis Plan, Beede Waste Oil Site, Treatability Study Field Investigation: RAC 1 W.A. No. 005-NSEE-011T
Addressee: JAMES DILORENZO - EPA - REGION I
Authors: DIANE MCKENNA - BROWN & ROOT ENVIRONMENTAL
Date: July 7, 1997
Format: LETTER No. Pgs: 1
AR No. 02.03.1 Document No. 000012

Title: Request For Review of Draft Sampling and Analysis Plan For Treatability Study Field Investigation at the Beede Waste Oil Superfund Site
Addressee: EPA QUALITY ASSURANCE TEAM
Authors: JAMES DILORENZO - EPA - REGION I
Date: July 15, 1997
Format: MEMORANDUM No. Pgs: 1
AR No. 02.03.2 Document No. 000034

Title: Sampling and Analysis Plan: Treatability Study Field Investigation - Response Action Contract (RAC), Region I
Addressee: EPA - REGION I
Authors: BROWN & ROOT ENVIRONMENTAL
Date: October 1997
Format: SAMPLING AND ANALYSIS DAT No. Pgs: 214
AR No. 02.03.3 Document No. 000035

Title: Tier II Data Validation, W.A. No. 005-NSEE-011T, Case No. 25864, SDG ANH55, Southwest Labs of Oklahoma
Addressee: CHRISTINE CLARK - EPA - REGION I
Authors: AWINASH MANMADE, LUCY GUZMAN - BROWN & ROOT ENVIRONMENTAL
Date: January 5, 1998
Format: SAMPLING AND ANALYSIS DAT No. Pgs: 20
AR No. 02.03.4 Document No. 000013

Title: Tier II Data Validation, W.A. No. 005-NSEE-011T, Case No. 25813, SDG MAKS73, Sentinel Inc.
Addressee: CHRISTINE CLARK - EPA - REGION I
Authors: MAUREEN PARKER, LUCY GUZMAN - BROWN & ROOT ENVIRONMENTAL
Date: January 13, 1998
Format: SAMPLING AND ANALYSIS DAT No. Pgs: 6
AR No. 02.03.5 Document No. 000017
*Attached to Document No. 000013 In 02.03

Title: Tier II Data Validation, W.A., No. 005-NSEE-011T, Case No. 25813, SDG ANH31, CompuChem Environmental
Addressee: CHRISTINE CLARK - EPA - REGION I
Authors: LUCY GUZMAN - BROWN & ROOT ENVIRONMENTAL
Date: January 14, 1998
Format: SAMPLING AND ANALYSIS DAT No. Pgs: 19
AR No. 02.03.6 Document No. 000014
*Attached to Document No. 000013 In 02.03

Title: Tier II Data Validation, W.A. No. 005-NSEE-011T, Case No. 25864, SDG MAKS81, ICM Laboratories
Addressee: CHRISTINE CLARK - EPA - REGION I
Authors: MAUREEN PARKER, LUCY GUZMAN - BROWN & ROOT ENVIRONMENTAL
Date: January 19, 1998
Format: SAMPLING AND ANALYSIS DAT No. Pgs: 5
AR No. 02.03.7 Document No. 000018
*Attached to Document No. 000013 In 02.03

Title: Tier II Data Validation, W.A. No. 005-NSEE-011T: Case No. 0030H, SDG DAHC29, Mitkem Corporation
Addressee: CHRISTINE CLARK - EPA - REGION I
Authors: LUCY GUZMAN - BROWN & ROOT ENVIRONMENTAL
Date: February 6, 1998
Format: SAMPLING AND ANALYSIS DAT No. Pgs: 7
AR No. 02.03.8 Document No. 000015
*Attached to Document No. 000013 In 02.03

Title: Tier II Data Validation, W.A. 005-NSEE-011T, DAS Case No. 0021H, SDG No. DAHC81 - CHEMTECH Consulting Group
Addressee: CHRISTINE CLARK - EPA - REGION I
Authors: AWINASH MANMADE, LUCY GUZMAN - BROWN & ROOT ENVIRONMENTAL
Date: February 24, 1998
Format: SAMPLING AND ANALYSIS DAT No. Pgs: 5
AR No. 02.03.9 Document No. 000016
*Attached to Document No. 000013 In 02.03

02.06 REMOVAL RESPONSE - WORK PLANS AND PROGRESS REPORTS

Title: Amendment to Statement of Work For Conducting an Engineering Evaluation/Cost Analysis (EE/CA)
Date: March 17, 1997
Format: WORK PLAN No. Pgs: 14
AR No. 02.06.1 Document No. 000007
*Attached to Document No. 000006 In 02.02

Title: Draft Final Work Plan Amendment No. 2: Engineering Evaluation/Cost Analysis- Response Action Contract (RAC), Region I
Addressee: EPA - REGION I
Authors: BROWN & ROOT ENVIRONMENTAL
Date: May 1997
Format: WORK PLAN No. Pgs: 29
AR No. 02.06.2 Document No. 000020

Title: Transmittal of Draft Final Work Plan and Draft Final Detailed Cost Estimate, Amendment No. 2, Engineering Evaluation Cost Analysis
Addressee: DIANE KELLEY - EPA - REGION I
Authors: GEORGE GARDNER - BROWN & ROOT ENVIRONMENTAL
Date: May 29, 1997
Format: LETTER No. Pgs: 1
AR No. 02.06.3 Document No. 000021
*Attached to Document No. 000020 In 02.06

Title: Final Work Plan: LNAPL Recovery Treatability Study, Response Action (RAC), Region I
Addressee: EPA - REGION I
Authors: BROWN & ROOT ENVIRONMENTAL
Date: July 1997
Format: WORK PLAN No. Pgs: 48
AR No. 02.06.4 Document No. 000022

Title: Comments on Draft Work Plan for LNAPL Recovery Treatability Study, Beede Waste Oil Superfund Site in Plaistow, New Hampshire
Addressee: DIANE MCKENNA - BROWN & ROOT ENVIRONMENTAL
Authors: JAMES DILORENZO - EPA - REGION I
Date: July 21, 1997
Format: LETTER No. Pgs: 3
AR No. 02.06.5 Document No. 000023
*Attached to Document No. 000022 In 02.06

04.04 FEASIBILITY STUDY - INTERIM DELIVERABLES

Title: Transmittal of Draft LNAPL Recovery Treatability Study and Field Investigation Report, Enginnering Evaluation/Cost Analysis
Addressee: JAMES DILORENZO - EPA - REGION I
Authors: DIANE MCKENNA - BROWN & ROOT ENVIRONMENTAL
Date: March 12, 1998
Format: LETTER No. Pgs: 1
AR No. 04.04.1 Document No. 000026

Title:	Comments on Draft LNAPL Recovery Treatability Study Report, W.A. No. 005-NSEE-011T		
Addressee:	DIANE MCKENNA - BROWN & ROOT ENVIRONMENTAL		
Authors:	JAMES DILORENZO - EPA - REGION I		
Date:	March 27, 1998		
Format:	LETTER	No. Pgs:	2
AR No.	04.04.2	Document No.	000027

Title:	Transmittal of Final LNAPL Recovery Treatability Study and Field Investigation Report, RAC I W.A. No. 005-NSEE-011T		
Addressee:	JAMES DILORENZO - EPA - REGION I		
Authors:	DIANE MCKENNA - BROWN & ROOT ENVIRONMENTAL		
Date:	April 7, 1998		
Format:	LETTER	No. Pgs:	1
AR No.	04.04.3	Document No.	000028

Title:	Beede Waste Oil Site Proposed Treatability Studies		
Date:	May 29, 1998		
Format:	REPORT, STUDY	No. Pgs:	4
AR No.	04.04.4	Document No.	000024

05.08 RECORDS OF DECISION - ROD BRIEFING DOCUMENTS

Title:	LNAPL Recovery Trench Design Evaluation, Beede Waste Oil Site, Treatability Studies, RAC I W.A. No. 005-NSEE-011T		
Addressee:	JAMES DILORENZO - EPA - REGION I		
Authors:	DIANE MCKENNA - BROWN & ROOT ENVIRONMENTAL		
Date:	June 6, 1997		
Format:	LETTER	No. Pgs:	9
AR No.	05.08.1	Document No.	000025

13.02 COMMUNITY RELATIONS - COMMUNITY RELATIONS PLANS

Title:	Community Relations Plan, Enginneering Evaluation/Cost Analysis		
Addressee:	EPA - REGION I		
Authors:	BROWN & ROOT ENVIRONMENTAL		
Date:	September 1997		
Format:	REPORT, STUDY	No. Pgs:	47
AR No.	13.02.1	Document No.	000030
*Attached to Document No. 000029 In 13.02			

Title:	Transmittal of Community Relations Plan - RAC 1 W.A. No. 005-NSEE-011T		
Addressee:	JAMES DILORENZO - EPA - REGION I		
Authors:	DIANE MCKENNA - BROWN & ROOT ENVIRONMENTAL		
Date:	September 5, 1997		
Format:	LETTER	No. Pgs:	1
AR No.	13.02.2	Document No.	000029

13.05 COMMUNITY RELATIONS - FACT SHEETS/INFORMATION UPDATES

Title:	RI/FS Information for the Pending Fact Sheet		
Addressee:	BETSY HORNE - EPA - REGION I		
Authors:	JAMES DILORENZO - EPA - REGION I		
Date:	May 22, 1998		
Format:	LETTER	No. Pgs:	1
AR No.	13.05.1	Document No.	000031

Title:	EPA Plans Floating Oil Cleanup		
Authors:	EPA - REGION I		
Date:	June 1998		
Format:	FACT SHEET, PRESS RELEASE	No. Pgs:	14
AR No.	13.05.2	Document No.	000033
*Attached to Document No. 000031 In 13.05			

Title: Confirmation of Transmittal Fact Sheet, Beede Waste Oil Site, EE/CA, RAC I W.A. No. 005-NSEE-011T
Addressee: JAMES DILORENZO - EPA - REGION I
Authors: DIANE MCKENNA - BROWN & ROOT ENVIRONMENTAL
Date: June 5, 1998
Format: No. Pgs: 1
AR No. 13.05.3 Document No. 000032

GUIDANCE DOCUMENTS

The EPA guidance documents listed below was considered during the process of selecting the response action for the Beede Wate Oil Non-Time Critical Superfund Site. These EPA guidance documents may be reviewed at the EPA Region I Office of Site Remediation and Restoration Records Center, 90 Canal Street, Boston, MA 02114.

1. Guidance on Conducting Non-Time Critical Removal Actions Under CERCLA, U.S. Environmental Protection Agency, Office of Emergency and Remedial Response. (EPA/540-R-93-057). August 1993. [C186]

APPENDIX 3

RESPONSIVENESS SUMMARY

NON-TIME-CRITICAL REMOVAL ACTION
ENGINEERING EVALUATION/COST ANALYSIS

BEEDE WASTE OIL SUPERFUND SITE
PLAISTOW, NEW HAMPSHIRE
CERCLIS ID NO. NHD018958140

Tetra Tech NUS, Inc.

EPA Contract No. 68-W6-0045
EPA Work Assignment No. 005-NSEE-011T
TtNUS Project No. N7537

SEPTEMBER 1998

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ATTACHMENTS

PREFACE

The U. S. Environmental Protection Agency (EPA) held a 30-day public comment period, from June 17, 1998 through July 16, 1998, to provide an opportunity for interested parties to comment on EPA's early cleanup plan to address oil floating on the groundwater beneath the Beede Waste Oil Superfund Site in Plaistow, New Hampshire. The plan is an interim remedial action, referred to as a Non-Time-Critical Removal Action, which is being implemented to accelerate removal of an obvious major source of groundwater contamination. The cleanup proposal was selected after EPA developed an Engineering Evaluation/Cost Analysis (EE/CA) that scrutinized various options for addressing the floating oil. EPA identified its proposed early cleanup plan in a fact sheet, issued in June 1998, at the start of the public comment period. On the evening of June 16, 1998, EPA conducted a public meeting to discuss the EE/CA and the proposed cleanup plan. On June 25, 1998, EPA held a formal public hearing at which two commenters spoke. No written comments were received during the public comment period.

The purpose of this responsiveness summary is to document EPA responses to the comments and questions raised during the public comment period. EPA considered all of the comments summarized in this document before selecting the early cleanup plan to address floating oil beneath the site.

The EE/CA and the public involvement process were developed consistent with EPA's *Guidance on Conducting Non-Time-Critical Removal Actions Under CERCLA (EPA 1993).*

The responsiveness summary is divided into the following sections:

Section I. Overview. This section discusses the site history, outlines the objectives of the EE/CA and identifies the alternatives evaluated in the document, and identifies and summarizes general reaction to EPA's proposed cleanup plan.

Section II. Background on Community Involvement and Concerns. This section contains a summary of the history of community interest and concerns regarding the Beede Waste Oil site.

Section III. Comments Received During the Public Comment Period and EPA's Response to those Comments. Each oral comment from the public on the EE/CA and proposed cleanup plan is repeated and responded to directly.

ATTACHMENT A - This attachment provides a list of the community relations activities that EPA has conducted for the Beede Waste Oil site.

ATTACHMENT B - This attachment is the transcript of the June 25, 1998, public hearing held in Plaistow, New Hampshire.

I. OVERVIEW

The Beede Waste Oil Superfund Site is located at 7 Kelley Road in Plaistow, New Hampshire. The site has road frontage on Kelley Road and Old County Road. The two-parcel site occupies approximately 39 acres in a generally residential area. Petroleum and waste oil storage and distribution activities occurred on Parcel 1 from the 1920s through the early 1990s. It occupies approximately 22 acres and is bordered to the northeast by Kelley Brook and associated wetlands. Parcel 2, at 17 acres, was used mainly for commercial sand and gravel operations. The site currently contains two buildings: a commercial building near the entrance to Parcel 1 and a rented residence at the northeast end of Parcel 2 along Old County Road.

Beginning in 1926, Parcel 1 was used to recycle used oil and store virgin fuel oil; sometime before 1953, sand and gravel excavation operations were conducted on Parcel 2. From 1962 to 1992, Cash Energy, Inc. and its affiliates, including Beede Waste Oil, operated the site. Beede Waste Oil received its first federally-approved permit in 1980 as a hazardous waste transporter and a waste oil blender/burner. Beede Waste Oil and Cash Energy discontinued site operations in the fall of 1992. From the fall of 1992 to August 1994, Tri-State Resources operated a virgin fuel oil storage and distribution business. No operations have occurred at the site since August 1994. Parcel 1 is now owned by Hampshire Reality Trust; Parcel 2 is owned by Sun Realty Trust.

Parcel 1 is relatively flat except for 1) a depression in its center that contained several above ground storage tanks; 2) two surface water runoff pits (SWRPs No. 1 and 2) on the northern side of the site; and 3) the northeastern portion of Parcel 1 that slopes toward Kelley Brook. Sand and gravel mining operations conducted in the 1960 and 1970s changed the topography of Parcel 2; the area was regraded in the 1980s and is relatively flat. Soil and debris piles also exist on Parcel 1 and on Parcel 2.

Significant water bodies near the site include Kelley Brook, which borders or crosses the site for approximately 2000 feet. The brook flows southeast to its confluence with the Little River, located approximately 3000 feet south of Parcel 2. An unnamed intermittent stream enters the site along the east-northeast perimeter of Parcel 2 and discharges to Kelley Brook.

Since 1983, several investigations and actions have been undertaken to assess and address site contamination on behalf of the property owners, NHDES, and EPA. These activities included installing monitoring wells; excavating test pits; collecting and analyzing soil, sediment, groundwater, and floating oil samples; sampling drinking water wells; installing point-of-entry treatment units at three homes and one commercial property; performing geophysical surveys; removing underground storage tanks (USTs), above ground storage tanks (ASTs), and waste-containing drums; digging interceptor trenches; and performing treatability studies.

Among the results of these investigations was discovery of three plumes of contaminated oil floating on the groundwater beneath the site. The main plume near the northern side of the site appears to have been created by oil leaking from a former 140,000 gallon UST and adjacent ASTs. The large plume in the center of Parcel 1 is associated with a former lagoon used to store/dispose waste oil for an unknown duration in the 1960s and early 1970s. A smaller plume, to the west, is associated with SWRP No. 1. The floating oil is seeping into the wetlands adjacent to the site. Observed floating oil thickness in ten monitoring wells is typically 1 to 5 feet. The floating oil is composed largely of petroleum hydrocarbons and has been characterized to include lubricating oil, No. 2 fuel oil/diesel, kerosene, gasoline, PCBs, metals, and solvents. The associated groundwater contaminant plumes extend from the source areas east and southeast across Parcel 2 and adjacent properties to the south.

Because of the presence of soil, surface water, and groundwater contamination and the threat of these chemicals contaminating drinking water wells, the site was proposed for inclusion on the National Priorities List in June 1996 and added in December 1996, making it eligible for federal cleanup funding. Ten contaminants associated with the floating oil (solvents, and metals such as cadmium and lead) have been determined to be present in groundwater, soil, surface water, and sediment at levels sufficient to pose a potential health risk to several categories of people. These include adult and child residents living in the site vicinity who consume groundwater from wells that may be impacted by the plumes; adults and children trespassing in the site wetlands or fishing in Kelley Brook; and potential future residents or industrial/construction workers should the site ultimately be used for these purposes.

There are several ways these categories of people could be exposed to contaminants. Adult and child residents could be harmed by drinking the contaminated groundwater, or having contact with it during bathing or use in the home or yard. Residents could inhale contaminants that volatilize from groundwater during bathing or home or yard use, or from surface water or sediment. Adult and child trespassers could be exposed by eating fish caught in Kelley Brook, or by having contact with the floating oil or contaminated surface water or sediment. Another medium posing potential risk is inhaling vapors from the solvents that might seep into basements of nearby homes. Future residents or industrial/construction workers could drink contaminated groundwater, come into contact with the groundwater and floating oil through construction digging, and could inhale solvent and floating oil vapors.

During the fall of 1997, EPA conducted treatability studies at the site to determine the success of several methods of capturing the floating oil as an interim action while the long-term, site-wide cleanup study was underway. The treatability studies involved constructing a 100-foot-long recovery trench at the edge of the wetlands, constructing extraction and monitoring wells in three areas, and testing various collection technologies within the trench and the extraction wells. Passive skimmers, skimmer pumps, and dual pump systems were tested in the trench. Skimmer pumps, total fluids pumps, and vacuum enhanced extraction were tested in the extraction wells. The treatability study results were included in the EE/CA report issued in June 1998.

The EE/CA report identified the interim action cleanup objectives:

- remove mobile floating oil from the groundwater beneath the site
- prevent further release of mobile floating oil into the Kelley Brook wetlands
- minimize extraction of groundwater during mobile floating oil removal

EPA identified general response actions, including collecting and containing mobile floating oil, which might be taken to satisfy these objectives. Based on these general response actions, EPA evaluated two alternatives in the EE/CA:

1 Vacuum Enhanced Extraction (VEE) and Passive Recovery Trench

A network of wells would be installed in each plume. A VEE system installed in the wells would be used to collect oil from the three plumes. The existing floating oil recovery trench would be extended approximately 24 feet to the west to capture oil that is migrating toward Kelley Brook. Passive skimmers would be used to collect oil from the trench.

Two separate systems were evaluated for this alternative.

- System A - aggressive removal (5 to 9 month operation of 153 wells)
- System B - less aggressive removal (48 to 57 month operation of 88 wells).

2 Belt Skimmers and Passive Recovery Trench

A network of wells would be installed in each plume. Belt skimmers installed in each well would collect oil from the plumes. The existing recovery trench would be extended approximately 24 feet to the west and 80 feet to the east to capture oil that is migrating toward Kelley Brook. Passive skimmers would be used to collect oil from the trench. Belt skimmers in each well would be operated for from 5 to 11 years.

A. Proposed Cleanup Plan

After reviewing the EE/CA alternatives, EPA identified its proposed cleanup plan, which is Alternative 1A.

The proposed cleanup plan included:

- Installing a VEE system in the three plumes (153 wells connected by piping to a vacuum blower, vapor and liquid treatment equipment, and instrumentation and controls).
- Extending the existing recovery trench 24 feet to the west.
- Completing the trench with three 8-foot concrete sections, stone backfill, impermeable liner, manholes, and soil backfill.
- Installing a passive skimmer system (Filter Buckets) in the recovery trench.
- Operating and maintaining the VEE and recovery trench systems.

Alternative 1A will meet all of EPA's objectives for this action.

B. General Reaction to the Preferred Alternative

The reaction to EPA's proposal, both at the public meeting on June 16 and the public hearing on June 25, 1998, was generally favorable. Principal concerns expressed both at the meeting and hearing included whether the vacuum created by the extraction wells would adversely affect nearby drinking water wells and whether the treatment plant itself would generate excessive noise at levels that would adversely affect the neighbors.

II. BACKGROUND ON COMMUNITY INVOLVEMENT AND CONCERNS

A neighborhood group was formed in the early 1990s to focus attention on the site and induce town and state officials to become involved in stopping site operations; several drinking water wells had been contaminated. The group became less active once the state took the lead in court proceedings against the site owners; it re-formed to become eligible to receive an EPA Technical Assistance Grant.

Attachment A lists community relations activities conducted at the Beede Waste Oil site.

III. COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD AND EPA'S RESPONSE TO THOSE COMMENTS

Two people testified at the public hearing: one offered general support for the proposed plan; the second expressed concern about the impact of the proposed plan on neighboring residences. The NHDES also offered a technical comment. A copy of the hearing transcript is attached as Attachment B.

The rest of this section characterizes the comments received during the public comment period and articulates EPA's response to those comments.

Comment 1: The extraction system will be running 24-hours a day. Since I live about 100 yards from where the system will be operating, I am concerned about the noise it will generate.

Response: To ensure that operation of the system does not result in increased noise levels outside the property boundary, the VEE system will be housed in a sound-dampening building located near the center of the site. The building will be constructed and located such that the noise from the extraction system does not exceed background levels at the site boundary. Sound levels expected during operation of the VEE system should be less than the typical background sound levels indicated on the table below:

EXPECTED SOUND LEVELS (DECIBELS) DURING SYSTEM OPERATION			
Inside Building	Immediately Outside Building	Nearest Point Along Fenceline	Typical Background Noise Levels
65 - 95	35 - 65	< 25	Residential neighborhood at night: 40 Room in quiet dwelling at midnight: 32 Room with window air conditioner: 55

Comment 2: The extraction wells will be pulling water from the aquifer below the site. Since neighboring drinking water wells draw from the same aquifer, will the amount of water the system wells withdraw adversely impact the water level in the residential wells?

Response: No. The VEE system will be designed and operated to minimize the collection of groundwater and will not have a significant impact on the aquifer in the area. It is estimated that approximately 680 gallons of water per day will be extracted by the system during operation. This is somewhat less than the average water use of two homes with four occupants each. (Based on an estimate compiled by the U.S. Geological Survey, the total average home use of water in the United States is approximately 90 gallons per person per day.)

Comment 3: The NHDES offered a technical comment on the proposed VEE system design. The department requested that an impermeable barrier be considered to seal the surface over the floating oil plume areas to enhance the effectiveness of the VEE system.

Response: Use of a surface seal and other system enhancements will be considered during design of the VEE system.

ATTACHMENT A

COMMUNITY RELATIONS ACTIVITIES CONDUCTED AT THE BEEDE WASTE OIL SUPERFUND SITE IN PLAISTOW, NEW HAMPSHIRE

ATTACHMENT A

COMMUNITY RELATIONS ACTIVITIES CONDUCTED AT THE BEEDE WASTE OIL SUPERFUND SITE IN PLAISTOW, NEW HAMPSHIRE

Community relations activities conducted at the Beede site include:

1996

January	Senator Robert Smith met with Selectmen to discuss the site and CERCLA reauthorization. He also visited the Beede Waste Oil Superfund Site.
February	US Attorney for the New Hampshire district issued a press release announcing the conviction of Mark Henry (the site owner/operator) on mail fraud charges.
April	Senator Robert Smith visited the site, and met with Selectmen and townspeople to discuss the site and CERCLA reauthorization.
June	The Department of Justice issued a press release announcing the Mark Henry was sentenced to 37 months in federal prison.
June	EPA announced the proposed listing of the Beede Waste Oil Site on the National Priorities List.
June	The New Hampshire Department of Health and Human Services completed the public health assessment, released the full report, and conducted a public meeting to discuss the findings.
August	EPA issued a press release announcing the beginning of a removal action to remove PCB-contaminated oil and other hazardous chemicals from on-site tanks and drums.
October	The New Hampshire Department of Health and Human Services conducted a community meeting to discuss the exposure investigation that looked at residential soil sampling.
November	EPA and NHDES conducted a public meeting to discuss the status of the site cleanup activities. A fact was issued that described site conditions and identified current and future activities to address site contamination.
December	EPA issued a press release announcing the inclusion of the Beede Waste Oil Site on the National Priorities List.

1997

January	EPA and the state provided a tour of the site to newly-elected Congressman John E. Sununu.
February	EPA and the state attended a neighborhood meeting to discuss the status of site cleanup and solicit names of people who were interested in being interviewed for the community relations plan.
Spring	EPA conducted local interviews to assist in developing the community relations plan.
April	EPA and NHDES attended a Plaistow Board of Selectmen meeting to update town officials and respond to any local government concerns.
April	A joint EPA-NHDES newsletter was issued that described the short- and long-term actions and studies the agencies are undertaking to address contamination at the site.
June	A joint EPA-NHDES newsletter was issued to update information in the April Edition.
June	EPA and NHDES sent representatives to the Old Homes Day event and were available to answer questions and pass out information.
September	EPA issued the Beede community relations plan.

1998

June	EPA published notices in The Carriage Towne News, the Haverhill Gazette, and the Lawrence Eagle Tribune announcing the establishment of the Administrative Record for the EE/CA and the date of the public meeting and public hearing to discuss the EE/CA and solicit public comment on the proposed cleanup plan.
June	EPA released a fact sheet discussing the EE/CA and the proposed cleanup plan.
June	A joint EPA-NHDES newsletter was issued discussing the status of site cleanup activities.
June	EPA conducted a public meeting on June 16 to discuss the proposed cleanup plan. Thirteen people signed the sign-in sheet.

June	EPA conducted a public hearing on June 25 to solicit public comment on the proposed cleanup plan. Six people signed the sign-in sheet; two people testified during the public hearing. A copy of the hearing transcript is included in the Administrative Record at the Information Repositories at the Plaistow Public Library and at the EPA Records Center.
June-July	EPA conducted a public comment period from June 17 to July 16, 1998. No written comments were submitted.

ATTACHMENT B

TRANSCRIPT OF THE JUNE 25, 1998 PUBLIC HEARING

HEARING OFFICER: Good evening. My name is Dick Boynton. I am from EPA's Superfund Program from the regional office in Boston, Mass. I will be tonight's hearing officer. This will be for a non-time-critical removal action at the Beede Waste Oil site, which is a cleanup plan for the removal of waste oil that is floating on the groundwater on the site on Kelley Road. Also with me tonight are Jim DiLorenzo, who is the EPA's project manager, Wayne Ives from the New Hampshire DES, who is the state project manager, Bob Minicucci from New Hampshire DES, and Angela Bonarrigo from our Boston office, who is our community relations coordinator.

The purpose of tonight's hearing is to formally accept oral comments on the cleanup plan. We will not be responding to comments tonight, but will respond to them in writing after the close of the comment period, which is July 16th, 1998.

A public information meeting on the plan was held on June 16, 1998, at this location, and at that meeting information concerning the plan was presented and EPA and New Hampshire DES responded to questions about the plan.

Now, let me describe the format for the hearing. First, Jim DiLorenzo will give a brief overview of the cleanup plan for the site. Following the presentation I

will accept oral comments for the record. Those of you wishing to comment should have indicated to Angela your desire for doing so by filling out an index card. I have only one card here from Mr. and Mrs. Banaski. Also we have copies of the plan available in the back if you would like to have those. And when you do speak for comments please give your name and address and speak clearly because we are recording the proceedings for the record and we have to have all the information. After all the comments have been heard I will close the formal part of the hearing and then I will open the meeting for questions informally. That part of the hearing will not be recorded. At the conclusion of the hearing if you have any questions about how to make comments you can see Angela and she will help you. And as I mentioned earlier, all the comments that we receive, both oral and written, during the comment period will be addressed in a responsiveness summary that will become part of the administrative record for the site and will be included with the decision on the cleanup plan. So, do we have any questions before we begin the formal part of the hearing? Alright, we will start with a brief overview of the plan by Jim DiLorenzo.

MR. DiLORENZO: Thanks Dick. I know I am

competing with the air conditioners and the fans, but I am going to leave them on. I am going to provide about a ten minute overview of the proposal that we are making here tonight just to familiarize those of you who were here at the public meeting and to provide some information to those of you who were not here. First of all I want to highlight that what we are performing here is an non-time-critical removal action, which is basically set in a three-phase approach, which EPA and New Hampshire DES are jointly taking to try to deal with the issues out at Beede Waste Oil. The first part of that was the time-critical removal action jointly performed by New Hampshire DES and EPA in 1997, which resulted in the removal of over 100 large above ground storage tanks and over 800 drums, including the tank contents and the physical tanks and drums themselves.

The second phase is this non-time-critical removal action, which is the plan we are proposing here tonight. And that will deal with a fairly large volume of oil that is floating on groundwater throughout the site that covers approximately two acres and is several inches thick throughout that area. It contains various hazardous constituents such as PCBs, volatile organic compounds, polyaromatic hydrocarbons, and all types of other

constituents. We are right here in that process, the public comment period. We recently issued an engineering evaluation and cost analysis, which basically was EPA's review of the various technologies and various alternatives for dealing with the floating oil. And the culmination of that is the purpose of tonight's hearing and last Tuesday's meeting. Following the close of the public comment period, EPA will evaluate all the written and oral comments and determine if we need to change our proposal. If not we will move forward to an action memorandum which will document that the proposal is final. That would happen in roughly September of this year. And we would hope to begin construction this October, but probably realistically not until next spring for the construction season unless we happen to have a winter like last winter. And then the proposal would take about a year to complete, five to nine months to be exact, and I will explain that in more detail in a few moments.

The final phase is the remedial investigation and feasibility study. And that will result in the characterization of the entire site, all the media; the soil, the groundwater, the sediment and the surface water in Kelley Brook. That is a very comprehensive study. Right now New Hampshire DES's consultants are performing

that work, and they are basically through with the majority of the field investigation. That is, they have collected several hundred soil samples, many, many groundwater samples and surface water and sediment. All that data has been collected over the past year and they are entering into a period of data crunching now where they are going to take all that data, evaluate it and eventually go through a process similar to what we are going through here: assembling different alternatives which will be presented to the public sometime late next year in order to get public comment on the final cleanup of the site. The final cleanup is unknown at this point in terms of how long it will take. We won't know that until we go through the rest of the remedial investigation and feasibility study. I guess that is all I'm going to say about that right now.

Now I would like to focus on the cleanup plan that we have here tonight. The objectives for this cleanup plan are to remove the floating oil, to stop the floating oil from seeping into the wetlands and Kelley Brook and in the process minimize the collection of water. This was a large consideration in looking at alternatives because it raises a lot of issues when you get into groundwater treatment this prematurely. We haven't finished our study

of groundwater alternatives and we need to evaluate what we are going to do with groundwater under the remedial investigation and feasibility study process. So, we wanted to minimize that collection of groundwater, which if we didn't do that may actually exacerbate the problem out there.

So, those were the three primary objectives that we were looking at when we were assembling different alternatives. From that we basically evaluated three alternatives. It was really two alternatives with one alternative having a couple of different variations. And what we came up with, what we feel is the best approach is what we refer to as alternative 1A. It is a vacuum enhanced extraction system which will simultaneously remove oil, water and vapor from the ground, focusing on the oil recovery. The oil will be what we are going after, as I said about the remedial action objectives. There is some 40 thousand gallons of oil we estimate, and we want to focus the process on collecting that oil. In doing the vacuum enhanced extraction it is going to involve installing 153 extraction wells that will be spaced over the approximate two-acre area. I will show you a map in a minute. They will be spaced roughly 30 feet apart over a two-acre area. So, it is a substantial

number of wells that will go down through the top of the floating oil and basically put a vacuum on it and pull the oil up. In doing that you do get some air or vapor and some groundwater, but the majority of the material coming out of the well will be oil.

We also, as part of the study, installed a recovery trench out along Kelley Brook. It is about 100 feet long and it is collecting oil. It has three floating oil buckets in it that are used to gather the oil and then they are manually emptied. That 100-foot trench seems to have cut off the majority of the oil that is getting to Kelley Brook, however, upon further investigation it was determined that we need to extend it another 24 feet towards Kelley Drive to intercept the entire length of the plume. So, we are going to extend that 24 feet as part of the proposal and then once again passive skimmers or buckets will be put in that trench to collect the oil.

This is a map of the general configuration of the three plumes out there. Plume number 1 seems to have originated from a former lagoon that was located on this part of the site, and roughly fills an area of about that extent. Plume number 2 appears to have originated primarily from this surface water runoff pit, which is right by the entrance to the site on Kelley Road. The

largest plume appears to have actually several different sources, the primary one of which is a former 140 thousand gallon underground storage tank, which was removed from this area several years ago. Also this surface water runoff pit and just various spills seem to have contributed to the overall plume.

Down in here you can see the trench. This demonstrates the extended trench, extending it from here to there roughly 24 feet. Right now it goes from here to about there. So, we would be extending it another 24 feet, which you may or may not be able to see from there I know, but basically it would cut off that entire piece of the plume which is getting into Kelley Brook. All of these triangles represent the 153 extraction wells at an approximate 30 foot radius. And they would all remove the oil, water and vapor through a central location which isn't shown here yet. This is only a conceptual design. We still need to do the final design which will show the more technical details. But that system would be located somewhere in the center of the site here and would house a vacuum which would be the primary part of the treatment system.

This is a typical vacuum extraction well, and it is simply a well that is drilled down into the water table.

A tube is put down the well and simultaneously extracts the floating oil. Some groundwater gets entrained in the oil and that pulls air in too. The air contains some of the lighter contaminants, so in the air column you do collect some contamination. The majority of what we will be pulling out will be the floating oil, and then some groundwater will get trapped up in the oil. What we are going to do is run the vapor through some type of treatment, either activated carbon or some other treatment, and then discharge the air that would be clean, it would be polished through the carbon or some other treatment. Then we would be collecting the floating oil into drums or more likely 5,000 gallon tanker trucks. Everytime we filled up 5,000 gallons we would ship it off-site for final disposition at an appropriate disposal facility. It likely would require incineration off-site because it will contain PCBs. And then the groundwater would be placed in the drums. We anticipate the overall oil recovery to be about roughly 40,000 gallons. The overall groundwater recovery would be a small fraction of that, probably in the hundreds of gallons. The efficiency of the system would go down as we operate. Initially we would be collecting a lot of oil and then you have to start cycling the system. As you start to thin that layer

out you need to shut it off and cycle it and let it recover. So, there will be a full-time operator on-site. We estimate that the entire system will only require five to nine months to operate, and we hope to have that system installed next spring.

This is a cross-section of the soon to be 124-foot trench that we are talking about. It is basically a 4 foot by 4 foot by 4 foot box, or boxes, a series of boxes that are connected. Oil and water float in. There is an impermeable barrier on the down gradiant side, the back side of the trench. The oil gets collected in there and flows into this bucket through this filter media that is shown right here. Only oil is collected in there. It does not collect groundwater. Once this bucket is filled up, it is roughly a third of a gallon or a half gallon capacity, it is dumped into a drum. Once the drum is filled then the drums are sent off-site. We have, or it will be added to the tanker trucks and sent off-site later on. We have three of these skimmer buckets currently operating in the trench. When we extend the trench another 24 feet we will add one or two more to optimize efficiency of the collection.

Why did we pick this proposed alternative? It was basically faster than any other alternative that we looked

at. We expect it to operate for five to nine months, whereas some of the other technologies we looked at were in the years. It is fairly easily implemented. It is a fairly common technology. It has been proven. It has been used elsewhere. And the cost is in comparison with the other alternatives that we looked at. We estimate the overall cost to be roughly 2.4 million including design and construction and operation of the system. And I think that is about it. The only thing I want to highlight is the system is a vacuum, it will generate noise, so we are going to place the vacuum system itself in a sound-dampening shed on the center of the site to try to reduce the noise. Once we get into the design phase we will provide more details as to decibel levels and what equipment we are going to use to dampen the sound et cetera. But, those are more design issues that will be brought up later on this winter.

So, with that said I don't know if Bob and Wayne or Wayne have anything to add at all? Okay. With that said, I am done.

HEARING OFFICER: I would like to begin the comments with Mr. and Mrs. Banaski.

MR. BANASKI: My name is Frank Banaski. I live at 16 Shady Lane here in Plaistow. I am

a direct abutter to the site. I just have two concerns. The first concern naturally is what was raised, both of them were spoken about, was the sound level, noise level of the extraction system. Since I am a direct abutter from it I will probably be about 100 yards from the system when it goes, so I am very concerned. At the last meeting it was mentioned that for the length of from five to nine months it would probably be running 24 hours a day with somebody there supervising it. So, at that level of running my concern is how much noise is that going to put out?

My second concern is again it was mentioned tonight, the amount of water that will be extracted from the system. Naturally we are in New Hampshire here and in New Hampshire everybody has drilled wells down to bedrock. There are some point wells in the area, so my concern is the amount of water that will be extracted from the system. All set.

HEARING OFFICER: Thank you Mr. Banaski. The second commenter is State Senator Rick Russman.

MR. RUSSMAN: Thank you. My name is Rick Russman and I represent Plaistow. I would hope that in terms of the noise that perhaps, I don't know if the thing can be worked so that it goes through the fall and

the winter and spring or something so that we can avoid the summer months. It might be helpful for not just Frank and his wife but to everybody in the neighborhood really that would be effected by that. I think that would be one alternative. And at the same time I want to commend both yourself, Mr. DiLorenzo, and Bob Minicucci as well as DES for the job you people have done, and certainly my hat's off to both of you. I think it has been a great job and I know that Senator Smith and Congressman Sununu's people are here tonight and hopefully they will take back the message and keep the money coming so we can get this cleaned up as rapidly as possible and try to get these people's lives back on line as rapidly as possible. I think a lot of times you say to somebody, "I know what you must be going through," but I don't think any of us probably know what it must be like to actually live next to a toxic waste site in terms of what the realities of it are on a day-to-day basis. So, I really am proud of the job that has been done here so far, and I just hope it continues. Thank you.

HEARING OFFICER: Thank you, Mr. Russman. Do we have anybody else who wants to offer an oral comment for the record? If I don't have any more oral comments this hearing is closed.

STATE OF NEW HAMPSHIRE

MERRIMACK, SS.

I, Cori Crumb, a Notary Public in the State of New Hampshire, do hereby certify that I transcribed from a tape recording the foregoing **fourteen (14)** pages and that the same is a true, full and correct transcript of all of the testimony, to the best of my knowledge and belief.

I further certify that I am neither attorney nor counsel for, nor related to, or employed by any of the parties to this action, and further that I am not a relative or employee of any attorney or counsel employed in this case, nor am I financially interested in this action.

IN WITNESS WHEREOF, I hereunto set my hand this 8th day of July 1998.

Cori Crumb

Cori Crumb, Audio Transcriber

My Commission Expires July 31, 2001