SULLIVAN'S LEDGE - OU1
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EXPLANATION OF SIGNIFICANT DIFFERENCES
SULLIVAN'S LEDGE SUPERFUND SITE
OPERABLE UNIT 1

I. INTRODUCTION

This document is a final Explanation of Significant Differences ("ESD") between the remedial action specified in the Record of Decision for the Sullivan's Ledge Superfund Site, Operable Unit I (the "OU-I ROD") and those now planned. This document also describes the conditions that justify these changes to the remedial action.

A. Site Name, Location

Site: Sullivan's Ledge Superfund Site -- Operable Unit I ("OU-I")

Site Location: New Bedford, Massachusetts

B. Lead and Support Agencies

Lead Agency: United States Environmental Protection Agency ("EPA")

Contact: David O. Lederer
(617) 918-1325

Support Agency: Massachusetts Department of Environmental Protection ("MA DEP")

Contact: David Buckley
(617) 556-1184

C. Legal Authority

Pursuant to Section 117(c) of the Comprehensive Emergency Response, Compensation and Liability Act (CERCLA), 42 U.S.C. S 9617, Section 300.435(c) of the National Contingency Plan (NCP), 40 C.F.R. S 300.435(c) and EPA guidance; if any remedial or enforcement action is taken under Section 104, 106 or 120 of CERCLA after adoption of a final remedial action plan, and if such action differs in any significant respect (i.e., in scope, performance, or cost) from the final plan, EPA must publish an explanation of the significant differences and the reasons why such changes were made. The EPA Interim Final Guidance on Preparing Superfund Decision Documents (OSWER Directive 9355.3-02, June 1989) further provides that issuance of an ESD is appropriate when EPA determines that the

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need for changes to a remedial action is significant but does not fundamentally alter the overall remedy.

Because EPA has determined that the changes to the remedial action at OU-I outlined below create significant but not fundamental differences from the remedy prescribed by the OU-I ROD, EPA is issuing this ESD.

D. Summary of Circumstances Necessitating this ESD

There are two circumstances requiring an ESD for Operable Unit 1.

1. The Record of Decision called for the concrete lining of the unnamed stream adjacent to the cap over the disposal area. The ESD calls for the culverting of a section of the unnamed stream adjacent to the disposal area and the replication of wetlands in the golf course across the street. This is necessary because it is not feasible restoring vegetation and habitat in the concrete lined channel as described in the ROD.

2. The substitution of a slurry wall for the shallow collection trench described in the Record of Decision along a section of the Site boundary; and the addition of two recovery wells to augment the slurry walls effectiveness in meeting the objectives of the remedy. The slurry wall was instituted because of depressions found in the bedrock surface during the design process. The recovery wells were installed due to difficulties in installing the slurry wall because of debris in this area.

EPA Interim Final Guidance on Preparing Superfund Decision Documents (OSWER Directive 9355.3-02) states that changes to a component of a remedy generally are incremental changes to the hazardous waste approach selected for the Site (i.e., a change in timing, cost, or implementability). EPA has determined that the revisions to the remedy described in this ESD do not fundamentally alter the overall approach of the remedy but, rather, are incremental changes to a component of the remedy. Thus, consistent with the guidance, it is appropriate to make these changes to the OU-I ROD through this ESD.

E. Location and Times at Which the Administrative Record File is Available for Public Review

In accordance with Section 117(d) of CERCLA, this ESD will become part of the Administrative Record for the Site, which is available for public review at the two locations listed below at the given times:

EPA Region I Records Center
One Congress Street
Boston, Massachusetts 02114
(617) 918-1356
Monday-Friday: 10:00 a.m. - 1:00 p.m.
2:00 p.m. - 5:00 p.m.

New Bedford Main Library
613 Pleasant Street
New Bedford, MA. 02740-6203
(508) 991-6275
Monday - Thursday: 9 am - 9 pm
Friday & Saturday: 9 am - 5 pm

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

A. Site History

The Sullivan's Ledge Disposal Area (the "Disposal Area") is a 12-acre parcel located in an urban area of the City of New Bedford in Bristol County in southeastern Massachusetts. The Disposal Area is bounded on the north by Hathaway Road, on the south by the Interstate 195/Route 140 Interchange and on the east and west by commercial development. The northeast corner of the Disposal Area and adjacent areas (the "floodplain section") are located in the 100-year floodplain of an unnamed stream (the "Unnamed Stream"). Immediately north of the Disposal Area, across Hathaway Road, is the Whaling City Golf Club (the "WCGC"), approximately 250 acres in size.

The Disposal Area was formerly operated as a granite quarry. Four granite pits with estimated depths of up to 150 feet have been identified from field investigations. After quarrying operations ceased, the land was acquired by the City of New Bedford. Between the 1930s and the 1970s, the quarry pits and adjacent areas on the Disposal Area were used for the disposal of hazardous materials and other industrial and solid wastes.

By way of the Unnamed Stream, which leads from the Disposal Area across the WCGC's land to water hazards on the WCGC's premises (the "Water Hazards"), contaminants have migrated from the Disposal Area to (i) the Unnamed Stream, (ii) the

Water Hazards, and (iii) wetlands on the WCGC's land which straddle the Unnamed Stream (the "Middle Marsh Area") (these areas and adjacent areas of concern are referred to collectively herein as the "Site").

EPA has divided the Site into two operable units. Operable Unit 2 ("OU-II") is the Middle Marsh Area, while OU-I, which is the subject of this ESD, consists of the remaining areas of the Site. Remedial work on the two operable units is being conducted by potentially responsible parties ("PRPs") under separate consent decrees which provide for coordination of certain remedial activities.

B. Contamination Problems

EPA completed Phase I and Phase II Remedial Investigations at OU-I (the "RIs") in 1987 and 1989, respectively. The RIs revealed high concentrations of polychlorinated biphenyls ("PCBs") and polycyclic aromatic hydrocarbons ("PAHs") in surface and subsurface soil. High concentrations of PCBs were also found in sediments. The RIs also indicated the presence of volatile organic compounds ("VOCs") and inorganics in the groundwater.

Based on the RIs, the areas of contamination are: (1) Disposal Area soil; (2) PCB-contaminated sediments that have washed off the Disposal Area into the Unnamed Stream, the Middle Marsh Area (OU-II), the Water Hazards and other adjacent wetland areas; and (3) wastes disposed of in the former quarry pits. In addition, groundwater in the overburden and bedrock is contaminated from wastes within the quarry pits.

C. Response History

Early in 1982, the Massachusetts Department of Public Works conducted tests at the Site in response to a proposal for construction of a commuter parking lot. Electrical capacitors were unearthed in the test borings. In 1982, EPA conducted an air monitoring program in the greater New Bedford area. EPA installed groundwater monitoring wells around the Site in 1983. Based in part on the results of these studies, the Site was included on the National Priorities List in September 1984.

In September 1984, EPA issued the owner of the Site, the City of New Bedford, an Administrative Order under Section 106 of CERCLA. In compliance with this Order, the City of New Bedford secured the Disposal Area by installing a perimeter

fence and posting signs warning against unauthorized trespassing.

EPA completed the two RIs in September 1987 and January 1989. The Feasibility Study was also completed in January 1989.

On June 29, 1989, EPA issued the OU-I ROD, which included a final remedial action plan. On June 11, 1991, the U.S. District Court of Massachusetts entered a Consent Decree in United States v. Acushnet Co., et al., Civil Action No. 91-10706-K (the "OU-I Consent Decree"). The OU-I Consent Decree serves as the legally binding agreement between EPA, MA DEP and fourteen PRPs to perform remedial activities at the Site. Among other things, this Consent Decree requires the PRPs to conduct pre-design studies to further assess the extent of contamination (the "Pre-Design Studies").

Since entry of the OU-I Consent Decree, the PRPs have conducted several studies to characterize further the extent of contamination at the Site. The PRPs are also required to design the remedial technologies that will contain and treat contaminants in the soil, sediments and groundwater, and conduct remedial action and operation and maintenance activities.

The June 29, 1989 ROD for OU-I also contains EPA's decision to divide the Site into two operable units. A decision on a remedial action at OU-II was deferred until further studies had been performed. After completion of studies and selection of a remedy, EPA issued a ROD for OU-II on September 27, 1991 (the OU-II ROD).

On April 23, 1993, the U.S. District Court of Massachusetts entered a Consent Decree in United States v. AVX Corporation, et al., Civil Action No. 93-10104-K, for the Middle Marsh Operable Unit (the OU-II Consent Decree). The OU-II Consent Decree serves as the legally binding agreement between EPA, MA DEP, and fifteen PRPs to perform remedial activities at OU-II. Fourteen of these PRPs share responsibility for the remediation of both operable units. The PRPs must perform the work for both operable units in accordance with the sequence of events described in the OU-II Consent Decree.

Construction of the OU I remedy began in 1998, while the OU-II project began in 1999. Completion of construction is scheduled for the fall of the year 2000.

D. Summary of the Selected Remedy

The selected remedy set forth in the OU-I ROD combines components of different source control alternatives and a management of migration alternative to obtain a comprehensive approach for remediation of all portions of OU-I. In summary, the originally selected remedy consisted of nine components:

1. Site preparation;

2. Excavation, solidification and disposal in the Disposal Area of contaminated soils from the Disposal Area (including the floodplain section);

3. Excavation, dewatering, solidification and disposal in the Disposal Area of contaminated sediments from the Unnamed Stream and the Water Hazards;

4. Construction of an impermeable cap over the Disposal Area, except for the floodplain section;

5. Diversion and lining of a portion of the Unnamed Stream;

6. Collection and treatment of contaminated groundwater;

7. Wetlands restoration/enhancement;

8. Long-term environmental monitoring; and

9. Institutional controls, including restrictions on groundwater use.

In addition, the selected remedial action for OU-II consists of the following components:

1. Site preparation;

2. Excavation of contaminated sediments and soils from portions of the Middle Marsh and adjacent wetlands;

3. Dewatering of the excavated materials;

4. Disposal of the materials beneath the cap that will be constructed over portions of the OU-I Disposal Area;

5. Restoration of the affected wetlands; and

6. Long-term environmental monitoring.

III. DESCRIPTION OF SIGNIFICANT DIFFERENCES AND THE BASIS FOR THESE DIFFERENCES

A. Summary of Information Demonstrating Significant Differences from the Selected Remedy

Substitution of Culvert for Concrete Lined Channel and the Addition of 750 Feet of New Stream Habitat Downstream as Mitigation

The OU I Record of Decision called for the concrete lining of a 750 foot long stretch of unnamed stream just to the east of the disposal area, the area on which the OU-I cap was to be placed. According to the ROD: "The concrete channel will prevent the waters of the unnamed stream from being pulled into the (groundwater) extraction wells. The concrete channel will be constructed with a series of baffled sections to reduce stream velocities and maximize sediment deposition".

In May 1995, the Design Criteria Report was released by O'Brien and Gere Engineers, the design firm engaged by the OU I Project Steering Committee. The report stated that the concrete lining of the stream raised concerns with long-term integrity of the liner and long-term operation and maintenance. Specifically, it would be impracticable to restore vegetation in a concrete or HDPE lined channel to conditions existing in the stream prior to remediation. Additionally, O'Brien and Gere concluded that intensive maintenance could be required to prevent the vegetation from eventually puncturing the concrete lining. Additionally, O'Brien and Gere concluded there are fewer implementability problems with diversion of the stream flow into a permanent pipe as opposed to pouring concrete into a existing stream channel.

As a result of these considerations, EPA has determined that a component of the remedy proposed in the ROD should be significantly altered. In particular, EPA has determined that the stream be culverted through the 750 foot section adjacent to the disposal area cap, and that wetlands mitigation of approximately the same length be installed just downstream on the grounds of the New Bedford Municipal Golf Course. Further discussion of this change in the remedial component is provided in Section III.B.1., below.

Substitution of Slurry Wall for A 200 Foot Section of the East-West Oriented Shallow Collection Trench

A slurry wall was substituted for a section of the shallow collection trench during the design process. Specifically, boring data collected during March and April 1996 along Hathaway Road to confirm the depth to bedrock indicated that an area of deeper bedrock existed along a 200 foot segment of the trench, parallel to the road. The competent bedrock in this area reached a depth of up to 40 feet below grade; the original estimated depth was 6-10 feet.(September 10,1996 letter from OBG). A June 6th 1996 report from O'Brien and Gere entitled "Shallow Collection Trench Technical Memorandum" looked at a series of possible alternatives to dealing with the deeper bedrock elevations in this 200 foot length along Hathaway Road. Included among them was the addition of passive collection wells tied into the collection trench, and various hydraulic barriers. The Technical Memorandum concluded that the hydraulic barrier would more effectively control the off-site migration of shallow groundwater than the passive well alternatives.

A September 17th, 1996 letter from OBG outlined the conceptual design of the Slurry Wall installed, stating that it would be about 200 feet long, 3 feet wide and extend to the top of competent bedrock and have a permeability of less than 1X10-7 cm/sec. The shallow collection trench would be installed several feet laterally to the south of the slurry wall to collect the shallow groundwater backing up behind the slurry wall. Per the September 17th letter, the slurry wall and shallow collection trench is designed to maintain the water table at an elevation of about 73-75 feet MSL.

In the fall of 1998 the slurry wall was constructed. Unfortunately, due to the discovery of debris in the area in which it was to be installed, the wall was only installed to a depth of 20-25 feet along its entire length. This limitation resulted in a gap between the bottom of the slurry wall and the top of the bedrock surface of up to 20-25 feet. The slurry wall was also constructed with a width of 6-16 feet, versus the design width of 3 feet. Modelling of groundwater flow with the slurry wall as designed was also provided(November 6, 1998 OBG letter). EPA's contractor, Metcalf and Eddy, commented on the November 6th proposal in a November 17th, 1998 letter requesting clarification of the groundwater modelling performed by OBG.

B. Description of Significant Differences Between the Remedy as Presented in the ROD and the Action Now Proposed

1. Description of Differences

The OU-I remedy called for the lining of the Unnamed Stream in the portion parallel to the eastern boundary of the Site for a distance of about 750 feet. Under this component, there would be clearing of areas adjacent to the Unnamed Stream portion, diversion of the surface waters flowing in the stream, excavation of contaminated sediments, concrete lining of the stream portion, and re-diversion of the stream. Instead, under the change in this ESD, the stream channel was permanently placed in an underground culvert and a new stream channel was created on the New Bedford Municipal Golf course for about an equal distance and vegetation was planted to recreate the habitat lost.

The OU I remedy also called for passive groundwater collection along the eastern and southern boundary of the Site. The passive system was to consist of the installation of a under drain pipe within a shallow trench backfilled with crushed stone. The remedy as revised includes a slurry wall along a portion of the southern boundary of the Site and two recovery wells installed adjacent to the slurry wall.

2. Rationale for Changes

EPA Interim Final Guidance on Preparing Superfund Decision Documents (OSWER Directive 9355.3) states that changes to a component of a remedy (i.e., a change in timing, cost or implementability) generally are incremental changes to the hazardous waste approach selected for the site. The revisions to the remedy described in this ESD do not fundamentally alter the overall approach of the remedy and are consistent with the above-referenced guidance.

Given the new information about the implementability of the lined stream channel including the infeasibility of restoring wetlands within such a lined channel; and the new information regarding bedrock elevations and the debris content along the southern boundary of the Site; the changes described in Section III.B.1., above, reduce the cost and increase the implementability of the remedy while remaining protective of human health, welfare and the environment. The decision to restore wetlands downstream of the Unnamed Stream channel is also more protective of the environment due to the infeasibility of restoring stream habitat in a lined concrete channel.

These changes also are consistent with the overall remedial approach in the OU-I ROD.

3. The Revised Remedy Continues to Comply with the Applicable or Relevant and Appropriate Requirements ("ARARs") for OU-I

Wetlands ARARs

The OU-1 ROD stated that:

> "Regulations under Section 404 of the Clean Water Act are applicable because channelization and lining of the unnamed stream...will involve a discharge of dredged or fill material. The Agency has determined that in this case there is no other practicable alternative which would address PCB contamination in sediments but which would also have a less adverse impact on the aquatic ecosystem. The selected remedy will comply with the substantive requirements of Section 404 to minimize adverse impacts to the aquatic ecosystem, ...by erecting baffles in the lined part of the stream, and by restoring the stream and wetlands"

The changes to the unnamed stream construction and restoration outlined herein are more protective of the ecosystem because they allow for the restoration of the unnamed stream in a parallel channel on the downstream reach within the Golf Course. Through these changes, EPA can avoid the impact which would occur within the lined channel alternative.

Similarly, the ROD stated that:

"DEQE (now DEP) Wetlands Protection Regulations concerning dredging, filling, altering, or polluting inland wetlands are applicable to the dredging of the unnamed stream and water hazards. The remedial action will comply with the performance standards of the regulations regarding banks, vegetated wetlands, and lands under water, and a one-for-one replication of any hydraulic capacity which is lost as the result of this part of the remedial action"

The changes outlined in this ESD comply with these regulations as well. The one-for-one replication of habitat lost to the culverting of the unnamed stream adjacent to the disposal area is outlined in the OU-1 Wetlands Restoration Plan.

Groundwater ARARs

The OU-1 ROD stated that Federal and State Maximum Contaminant Levels (MCLs) are relevant and appropriate standards. The ROD went on to state that these standards were waived in the deep

bedrock aquifer for this cleanup due to the technical impracticability of extracting dense non-aqueous phase liquids (DNAPL) from bedrock fractures. The ROD stated that instead:

> ...(T)he cleanup goals for groundwater at this Site are the significant reduction of contaminant mass in the aquifer and the protection of local surface water bodies.

The waiver of groundwater ARARs for deep bedrock is unaffected by the changes contained within this ESD. The changes in the remedy related to the slurry wall and the accompanying recovery wells meets the intent of conceptual design in the OU-1 ROD for shallow groundwater.

4. Ongoing Investigations

In addition to the components of the selected remedy described in Section II.D, above, and the significant changes to the original remedy described in Section III.B, above, where appropriate, as determined by EPA, in consultation with MA DEP, an additional study shall be implemented as part of the revised remedy during the initial phase of the operation of the groundwater treatment plant and groundwater collection system. Briefly the study to be conducted includes an assessment of the ability of the slurry wall and recovery wells as constructed in place of the shallow collection trench to mitigate the migration of shallow groundwater as proposed by the Record of Decision

IV. SUPPORTING AGENCY COMMENTS

The Commonwealth of Massachusetts has expressed its concurrence with the changes outlined in this ESD in its letter to EPA of September 22, 2000 which is attached to this ESD as Appendix A.

V. STATUTORY DETERMINATIONS

Considering the new information that has been developed and the changes described in this ESD that have been made to the selected remedy, EPA and MA DEP have determined that the remedy remains protective of human health, welfare and the environment and is cost effective. The revised remedy complies with federal and state ARARS to the same extent as the ROD for OU-I. The basis for continuing to waive portions of ARARs in the OU-I ROD still remains valid.

VI. PUBLIC PARTICIPATION

The changes described within this ESD have been discussed in public meetings prior to the start of construction, as well as public information sessions held prior to the start of each successive construction season on February 23, 1999, and February 15, 2000. Community Updates were issued to the Site mailing list in March 1997, July 1998, February 1999, and September 1999.

Notice and information regarding these changes to the OU-I ROD has been published in the local newspaper, the New Bedford Standard Times.

9/27/00
Date of Issuance

By: Patricia L. Meaney
Patricia L. Meaney, Director
Waste Management Division

APPENDIX A

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
ONE WINTER STREET, BOSTON, MA 02108 617-292-5500

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JANE SWIFT
Lieutenant Governor

BOB DURAND
Secretary

LAUREN A. LISS
Commissioner

September 22, 2000

Patricia Meaney
Director
Office of Remediation and Restoration
U.S. EPA, HBO
One Congress Street, Suite 1100
Boston, MA 02114-2023

Re: Explanation of Significant Difference
Operable Unit One, Sullivan's Ledge Superfund Site
New Bedford, Massachusetts

Dear Ms. Meaney:

The Department of Environmental Protection has reviewed the second Explanation of Significant Difference (ESD) for Operable Unit One at the Sullivan's Ledge Superfund Site in New Bedford, Massachusetts. The ESD details two changes implemented at the site. Specifically, the changes are the manner in which the un-named stream was remedied, and the method of groundwater capture at the disposal site's northern boundary.

The Department believes the remedy changes described in the ESD continue to be protective of human health and the environment while providing a significant improvement in the practicality of the remedy. Therefore, the Department concurs with EPA's proposal as outlined in the second Explanation of Significant Difference for Operable Unit One at the Sullivan's Ledge Superfund Site.

Please call me at 292-5648 should you have any questions. Thank you for your attention to this matter.

Sincerely,

Deirdre C. Menoyo

Deirdre Menoyo
Assistant Commissioner
Bureau of Waste Site Cleanup

DM/DB

Cc. David Lederer, EPA

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