



NOTE: THIS REVISED FEDERAL FACILITY
AGREEMENT INCORPORATES ALL PREVIOUS
AMENDMENTS AND SUPERCEDES THE ORIGINAL
AGREEMENT EXECUTED IN JULY 1991 AND ALL
SUBSEQUENTLY AMENDED VERSIONS

Superior High School

SITE 0115 AFB

BREAK 10.16

OTHER 10.16

COPY

United States Environmental Protection Agency

Region I

And The

United States Department of Defense, National Guard Bureau

IN THE MATTER OF:

The U.S. Department of Defense,
National Guard Bureau,

Massachusetts Military Reservation
Cape Cod, Massachusetts

FEDERAL FACILITY AGREEMENT UNDER CERCLA § 120

AND RCRA § 7003

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- I. MAP IDENTIFYING MMR DOD DEPARTMENTAL AND USCG BOUNDARIES
- II. MAP IDENTIFYING STUDY AREAS AND AREAS OF CONTAMINATION AS OF EFFECTIVE DATE OF THE AGREEMENT

United States Environmental Protection Agency
Region I
and the
United States Department of Defense, National Guard Bureau

IN THE MATTER OF:) Federal Facility Agreement
) under CERCLA § 120 and
) RCRA § 7003
The U.S. Department)
of Defense, National Guard Bureau)
)
)
Massachusetts)
Military Reservation)
Cape Cod, Massachusetts)

Based on the information available to the Parties on the Effective Date of this Federal Facility Agreement (Agreement), and without trial or adjudication of any issues of fact or law, the Parties agree as follows:

I. PURPOSE

1.1 The general purposes of this Agreement are to:

- (a) Ensure that the environmental impacts associated with the past and present activities at the Site are thoroughly investigated and to ensure that the appropriate Response Action is taken as necessary to protect the public health, welfare, and the environment;
- (b) Establish a procedural framework and Timetable for developing, implementing and monitoring appropriate Response Actions at the Site in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986 (collectively CERCLA), the National Contingency Plan (NCP), Superfund guidance and policy; and

- (c) Facilitate cooperation, exchange of information and participation of the Parties in such actions.

1.2 Specifically, the purposes of this Agreement are to:

- (a) Establish requirements for the performance of a Site Inspection(s) (SI) and Remedial Investigation(s) (RI) to assess the nature and extent of the threat to the public health, welfare and the environment caused by the release or threatened release of Hazardous Substances, pollutants or contaminants at the Site and to establish requirements for the performance of Feasibility Studies (FS) to identify, evaluate and select alternatives for the appropriate Remedial Action(s) at the identified Area of Contamination (AOC) to prevent, mitigate or abate the release or threatened release of Hazardous Substances, pollutants or contaminants at the Site in accordance with CERCLA, applicable state law and this Agreement;
- (b) Identify the nature, objective, and Schedule of Response Actions to be taken at the Site and to ensure that Remedial Actions at the Site shall attain that degree of cleanup of Hazardous Substances, pollutants or contaminants mandated by CERCLA and applicable Records of Decision;
- (c) Implement selected Remedial Action(s) in accordance with CERCLA, applicable Records of Decision, applicable State law and this Agreement; and to meet the requirements of CERCLA § 120(e)(2), 42 U.S.C. § 9620(e)(2);
- (d) Ensure compliance, through this Agreement, with RCRA and other Federal and State hazardous waste laws and regulations for matters covered herein;
- (e) Coordinate Response Actions at the Site with the mission and support activities at the Federal Facility known as the Massachusetts Military Reservation;
- (f) Expedite the cleanup process to the extent consistent with the protection of public health, welfare and the environment;
- (g) Provide for the Operation and Maintenance of any Remedial Action selected and implemented pursuant to this Agreement;

- (h) Identify Removal Actions which are appropriate for the Site in accordance with the terms of this Agreement and provide timely notice to the other Parties of such proposed actions; and
- (i) Integrate all activities which are performed under RCRA § 7003 authority to address contamination resulting solely from the disposal of petroleum products (including all actions to address petroleum constituents and/or additives) into Response Actions being taken or to be taken under CERCLA in accordance with this Agreement.

II. PARTIES AND SCOPE OF AGREEMENT

- 2.1 The Parties to this Agreement are the EPA, the National Guard Bureau (NGB) (representing all other United States Department of Defense (DOD) agencies who own or control property at the Site), and the Department of the Air Force (USAF). When reasonably necessary to effectuate efficient and effective management of their responsibilities under the Agreement, the NGB and the USAF may transfer federal lead agency status from one to another during the performance of their responsibilities under the FFA. Such change of DOD federal lead agency status is not subject to dispute nor does it affect the binding nature of this Agreement or its enforceability. The redesignated lead agency will notify the other Parties within fourteen (14) days of any such change. The terms of this Agreement and Appendix V shall apply to and be binding upon the EPA, the NGB, and the USAF.
- 2.2 In selecting contractors to perform Work associated with the Site, the Federal Parties will comply with the Federal Acquisition Regulation (FAR) Subpart 9.4, 48 C.F.R. Subpart 9.4 and 40 C.F.R. Part 32.
- 2.3 Each Party shall be responsible for ensuring that its contractors receive a copy of and comply with the terms and conditions of this Agreement. Failure of NGB to provide proper direction to its contractors and any resultant noncompliance with this Agreement by a contractor shall not be considered a Force Majeure event or other good cause for Extensions under Section XV (Extensions), unless the Parties so agree. The Parties, upon selection of a contractor and when practicable in advance of their contract performance, shall notify the other Parties to this Agreement of the identity and of the assigned tasks of said contractor.
- 2.4 This Agreement shall apply to and be binding upon the Parties, their respective officers, successors in office,

agents and employees and shall not be construed as an agreement to indemnify any person unless specifically provided herein. The NGB shall provide notice, or a copy of this Agreement, to appropriate members, employees, agents, lessees and Response Action contractors of the existence of this Agreement. The NGB agrees to include notice of this Agreement in any document transferring ownership or control to any subsequent owners and operators of any portion of the Federal Facility in accordance with CERCLA § 120(h), 40 C.F.R. §§ 264.119 and 264.120 and shall notify EPA of any such change of ownership or control at least sixty (60) days prior to such transfer. This Agreement shall also be binding upon any successors in interest of the NGB.

- 2.5 The scope of this Agreement extends to the entire Site, as defined at Section III 3.1 (g,g) herein. The Parties agree that the entire Site is listed as an EPA Superfund Site and therefore the Site cannot be removed from the NPL until EPA determines, in accordance with CERCLA, and this Agreement, that the Site no longer poses a threat to public health, welfare and the environment. Further, the Parties agree that due to the complexity of the Remedial Action(s) at the Site and the methods utilized to identify Hazardous Substances at the Site, Response Actions at the Site shall occur in discrete locations called Study Areas (SA), Areas of Contamination (AOC), or Operable Units (OU) identified at the Site pursuant to this Agreement. For each Study Area, Area of Contamination, or Operable Unit the NGB shall perform all applicable Work identified in Paragraphs 2.6, 2.7 and 2.8 below in accordance with the requirements of this Agreement.
- 2.6 The NGB shall develop, implement and report upon Site Inspections (SI), Decision Documents (DD) and Remedial Investigations (RI) at the Site for each AOC or OU in accordance with Section VI (Work To Be Performed) of this Agreement, the NCP and applicable EPA policy and guidance. All SI, DD, and RI documents, including all those SI, DD, and RI documents produced by the NGB but not reviewed by the EPA prior to the Effective Date of this Agreement, shall be subject to the review and comment procedures described in Section VII (Consultation with EPA), of this Agreement. All SI and RI activities at the Site shall be conducted in accordance with the requirements and Deadlines set forth in Appendix III and Section XIV (Deadlines and Schedules), of this Agreement. All SI and RI activities shall be designed to meet the purposes set forth in Section I (Purpose), of this Agreement.
- 2.7 The NGB shall develop, implement and report upon Feasibility Studies (FS) for each AOC or OU at the Site in accordance with Section VI (Work To Be Performed) of this

Agreement, the NCP and applicable EPA regulations, policy and guidance. All Feasibility Study documents, including all those FS documents relating to the Site produced by the NGB but not reviewed by the EPA prior to the Effective Date of this Agreement shall be subject to the review and comment procedures described in Section VII (Consultation with EPA), of this Agreement. All FSs shall be conducted in accordance with the requirements and Timetables set forth in Appendix III and Section XIV (Deadlines and Schedules), of this Agreement. All FSs shall meet the purposes set forth in Section I (Purpose), of this Agreement.

- 2.8 The NGB shall perform Remedial Design, Remedial Action (RD/RA) and Operation and Maintenance activities at the Site in accordance with CERCLA § 120(e)(2), Section XVII (Records of Decision and Plans for Remedial Action), of this Agreement, CERCLA, the NCP, RCRA and applicable regulations thereof.
- 2.9 Any decision to close the Federal Facility will not affect the NGB obligation to comply with all the terms of this Agreement. Base closure will not constitute a Force Majeure under Section XVI, (Force Majeure), nor will it constitute good cause for Extensions under Section XV (Extensions), unless mutually agreed by the Parties.

III. DEFINITIONS

- 3.1 The terms used in this Agreement shall have the same definitions as the terms defined in CERCLA and the National Contingency Plan (NCP) unless specifically otherwise defined in this Agreement. The following terms used in this Agreement are defined as follows:
- (a) "Additional Work" shall mean all activities required by Paragraphs 7.9, 19.3 and 32.4 herein;
 - (b) "Agreement" shall refer to this document and shall include all Appendices to this Agreement. Copies of Appendices shall be available as part of the Administrative Record as provided in Section XXXVII. All such Appendices shall be appended to and made part of this Agreement and shall be enforceable hereunder;
 - (c) "ARARs" shall mean Federal and State Applicable or Relevant and Appropriate Requirements, standards, criteria, or limitations, identified pursuant to CERCLA § 121. ARARs shall apply under this Agreement in the same manner and to the same.

extent that ARARs are applied to a non-Federal Facility pursuant to CERCLA § 120(a)(1) and the NCP;

- (d) "Area of Contamination" or "AOC" shall mean (1) Any of the areas listed or described in Section V (Findings of Fact), Paragraphs 5.24 and 5.25, of this Agreement as an Area of Contamination, including any Area or any group of areas, to or under which a release of Hazardous Substances has come to be located, or threatens to migrate, from any of the above listed areas and as to which a Site Inspection has been completed recommending further action is warranted pursuant to CERCLA or the NCP; and (2) any Area or location or group of areas or locations, where a Hazardous Substance has been deposited, stored, disposed of, or placed, or otherwise come to be located within the Site boundaries and identified by any of the Parties or their agents and added to this Agreement pursuant to Section VI (Work To Be Performed) of this Agreement and as to which a Site Inspection has been completed recommending further action is warranted pursuant to CERCLA or the NCP.
- (e) "CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. § 9601 et seq. as amended by the Superfund Amendments and Reauthorization Act of 1986, Public Law 99-499 and any subsequent amendments;
- (f) "Cleanup Standard(s)" shall mean the numerical criteria representing the degree of cleanup to be achieved at the Site as set forth in each Record of Decision (ROD);
- (g) "Commonwealth" shall mean the Commonwealth of Massachusetts and its employees, agents, authorized representatives, successors and assigns;
- (h) "Comprehensive Plan" shall mean the Primary document which establishes a process for assessing environmental contamination at the Massachusetts Military Reservation and that describes the implementation of the Response Action process, including identification of Study Areas, Site Inspection, Remedial Investigation/Feasibility Study, Remedial Design, Remedial Action and any modifications thereto in accordance with this

Agreement. The Comprehensive Plan outlines the philosophy underlying the investigation and Response Actions for all Study Areas, Areas of Contamination and Operable Units. The Comprehensive Plan shall be consistent with CERCLA and the NCP. Any conflict between the Comprehensive Plan and this Agreement shall be resolved by this Agreement;

- (i) "Day" or "Days" means calendar day(s), unless business day(s) are specified. Any submittal or written statement of dispute which under the terms of this Agreement would be due on Saturday, Sunday, or a holiday shall be due on the next occurring business day;
- (j) "Deadline(s)" shall be the time limitation applicable to issuance by the NGB of all Primary documents up to and including all Record of Decisions (RODs) for which a limitation has been specifically established under the terms of this Agreement;
- (k) "Decision Document" shall mean the document that supports the determination that a Remedial Investigation/Feasibility Study is not required at a Study Area.
- (l) "Department of Defense" or "DOD" shall mean an executive department of the United States created by 10 U.S.C. sections 131-140b as defined in 10 U.S.C. section 101(5).
- (m) "EPA" shall mean the United States Environmental Protection Agency, its employees, agents, authorized representatives, successors and assigns;
- (n) "Federal Facility" and "Massachusetts Military Reservation (MMR)" shall mean the real property comprising the Massachusetts Military Reservation as described in the EPA Hazard Ranking Scoring package titled "Otis ANGB: UTES AND PDO sites (Camp Edwards)". Such real property is located on the "upper" western portion of Cape Cod within or bounded by Bourne, Mashpee, Falmouth and Sandwich in Barnstable County, Massachusetts, approximately 60 miles south of Boston, Massachusetts and comprising approximately 22,000 acres. For purposes of this Agreement the term Federal Facility, Massachusetts Military Reservation and MMR shall include such real property even if later

transferred from ownership or control of the United States or an agency or department thereof;

- (o) "Feasibility Study" or "FS" shall mean a study conducted pursuant to CERCLA and the NCP, which fully develops, screens and evaluates in detail Remedial Action alternatives to prevent, mitigate, or abate the migration or the release or threatened release of Hazardous Substances, pollutants or contaminants at and from the Site, an Area of Contamination or any aggregate or combination of Areas of Contamination or OU, which satisfies the same requirements;
- (p) "Hazardous Substance(s)" shall mean all those substances which are included under CERCLA § 101(14), 42 U.S.C. § 9601(14); and as hazardous constituents under RCRA § 3008(h) and 40 C.F.R. Part 261 Appendix VII (which, for purposes of those sites covered by RCRA 7003 jurisdiction under this Agreement, shall expressly include as solid waste and hazardous waste the constituents of and additives to petroleum products, aviation fuels and motor fuels handled, stored or disposed of at the Site);
- (q) "Meeting" when used in reference to the Parties Project Managers shall mean an in-person meeting at a single location. A conference call will suffice for an in-person meeting at the concurrence of the Project Managers;
- (r) "National Contingency Plan" or "NCP" shall mean the National Oil and Hazardous Substances Pollution Contingency Plan and any subsequent amendments, promulgated pursuant to CERCLA and found at 40 C.F.R. Part 300;
- (s) "NGB" shall mean the National Guard Bureau, a bureau of the United States Department of Defense, its employees, members, agents, and authorized representatives as well as the Department of Defense (DOD) and, at such times as a transfer of lead agency status in accordance with Section 2.1 is in effect, shall also specifically mean the United States Air Force (USAF), to the extent necessary to effectuate the terms of this Agreement, including, but not limited to, appropriations and Congressional reporting requirements;

- (t) "Operable Unit" or "OU" shall have the same meaning as in the NCP;
- (u) "Operation and Maintenance" or "O&M" shall mean the portion(s) of the Response Action(s) required to maintain its effectiveness;
- (v) "Parties" shall mean the NGB, EPA, and, at such times as a transfer of lead agency status in accordance with Section 2.1 is in effect, shall also specifically include the USAF;
- (w) "Performance Standard(s)" shall mean the criteria representing the degree and method of cleanup to be achieved at the Site, including all location-, chemical-, and action- specific ARARs identified in a ROD and the Comprehensive Plan, or by the EPA prior to Certification of the Completion of the Work; and all other health or environmentally related numerical standards in the ROD. Performance Standards include all Cleanup Standards;
- (x) "RCRA" shall mean the Resource Conservation and Recovery Act, 42 U.S.C. § 6901 et. seq., as amended by the Hazardous and Solid Waste Amendments of 1984, Public Law 98-616 and any subsequent amendments;
- (y) "Remedial Design" or "RD" shall have the same meaning as provided in the NCP;
- (z) "Record of Decision" or "ROD" shall mean a public document that describes the Remedial Action alternative(s) selected to be implemented as one or more Operable Units at Areas of Contamination and the basis for the selection. The ROD shall be based on information and technical analysis generated during the RI/FS and consideration of public comments and community concerns;
- (a,a) "Remedial Investigation" or "RI" shall mean that investigation conducted pursuant to CERCLA and the NCP. The RI serves as a mechanism for collecting data for site and waste characterization and conducting treatability studies as necessary to evaluate performance and cost of the treatment technologies. The data gathered during the RI will also be used to conduct a risk assessment appropriate to the scope of the RI, including characterization of risk of harm to the public health, welfare and the environment, to perform a

Feasibility Study, evaluation of the natural resources damaged by the releases or threatened releases of Hazardous Substances, and to support the design of a selected remedy;

- (b,b) "Remedy" or "Remedial Action" or "RA" shall have the same meaning as provided in CERCLA § 101(24), 42 U.S.C. § 9601(24), and the NCP, and may consist of one or more Operable Units;
- (c,c) "Remove" or "Removal" shall have the same meaning as provided in CERCLA § 102(23), 42 U.S.C. § 9601(23);
- (d,d) "Response Action(s)" shall mean all Removal and Remedial Actions including enforcement activities related to the Site;
- (e,e) "Risk Assessment" shall mean the baseline risk assessment as described in the "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Interim Final", EPA OSWER Directive 9355-01, as amended, unless the context of the use of the term clearly indicates that some other risk assessment method is identified and intended;
- (f,f) "Schedule(s)" shall mean the time limitations established for the completion of all post ROD activities and documents established pursuant to this Agreement;
- (g,g) "Site" shall encompass land owned, operated, controlled, leased, licensed or used by right of easement by any department or agency of the United States Government in the past and at the present time at the Federal Facility known as the Massachusetts Military Reservation or any Area off the Federal Facility to or under which a release of Hazardous Substances has migrated, or threatens to migrate, from a source on or at Massachusetts Military Reservation. For purposes of obtaining permits, the term "on-Site" shall include areas within the MMR facility, the areal extent of contamination therefrom, and all suitable areas in close proximity to the contamination necessary for implementation of Response Actions;
- (h,h) "Site Inspection " or "SI" shall mean an on-Site investigation to determine whether a release or potential release exists and the nature of the associated threats to the public health, welfare

and environment. Sampling and other field data shall be used to augment the Preliminary Assessment (PA) and determine if further investigation or Response Action is required. Such SI shall be conducted to satisfy CERCLA, CERCLA guidance, and the NCP, as supplemented by the substantive provisions of the EPA RCRA Facilities Assessment guidance;

- (i,i) "State" shall mean the Commonwealth of Massachusetts and its employees, agents, authorized representatives, successors and assigns;
- (j,j) "Study Area" or "SA" shall mean an Area or areas within the Site, identified pursuant to a PA, or this Agreement, as an Area of potential contamination. If, pursuant to the Site Inspection, it is determined that further action is warranted, an RI/FS shall be conducted and the Area shall henceforth be designated an Area of Contamination. If a Site Inspection determines that no further action is warranted, a Decision Document shall be prepared to remove the Study Area from the remedial process;
- (k,k) "Timetable(s)" shall be the collective terms for all Deadlines and Schedules established pursuant to this Agreement;
- (l,l) "Technical Environmental Affairs Committee" or "TEAC" shall mean the Committee of federal, State and local government and community representatives as defined at 10 USC § 2705(c) established at MMR in 1985;
- (m,m) "USAF" shall mean the United States Air Force, a department of the United States Department of Defense, its employees, members, agents, and authorized representatives (which shall specifically include the Air Force Center for Environmental Excellence) as well as the Department of Defense (DOD), to the extent necessary to effectuate the terms of this Agreement, including, but not limited to, appropriations and Congressional reporting requirements;
- (n,n) "USCG" shall mean the ~~United~~ States Coast Guard, a bureau of the United States Department of Transportation;

- (o,o) "Work" shall mean activities or obligations required by this Agreement and the Comprehensive Plan, including but not limited to SI, RI/FS, RD/RA, Operation and Maintenance (O&M) and any activities required to be undertaken pursuant to Section VI or the Comprehensive Plan.

IV. JURISDICTION; NOTICE TO THE STATE

- 4.1 Each party is entering into this Agreement pursuant to the following authorities:
- (a) The EPA enters into those portions of this Agreement that relate to SI, RI/FS pursuant to CERCLA § 120(e)(1) and Executive Order 12580;
 - (b) EPA enters into those portions of this Agreement that relate to Areas of Contamination, Operable Units, and all final Remedial Actions pursuant to CERCLA § 120(e)(2) and Executive Order 12580;
 - (c) The NGB enters into those portions of this Agreement that relate to the SI, DD, RI/FS, Interim, and final Remedial Actions pursuant to CERCLA § 120(e)(1) and (2), Executive Order 12580 and the Defense Environmental Restoration Program (DERP), 10 U.S.C. § 2701 et. seq.;
 - (d) All Parties enter into portions of this Agreement relating to actions taken to address contamination caused solely by the disposal of petroleum products (including all actions to address petroleum constituents and/or additives) pursuant to RCRA § 7003; and
 - (e) EPA's authority to settle a matter under RCRA § 7003, after notice to the affected State, has been delegated to the Director, Office of Site Remediation and Restoration, U.S. Environmental Protection Agency, Region I by EPA Delegation Nos. 8-22-A and 8-22-C dated September 3, 1996.
- 4.2 In accordance with Section 7003(a) of RCRA, 42 U.S.C. § 6973(a), the Commonwealth of Massachusetts has been notified of the Parties' decision to include jurisdiction under RCRA § 7003 as part of this Agreement.
- 4.3 The Parties have agreed to include Section 7003 of RCRA in this Agreement in order to address those sites caused solely by petroleum releases which fall within the scope of the

CERCLA petroleum exclusion described in the last sentence of CERCLA section 101(14).

V. STATEMENT OF FACTS

A. SITE HISTORY

- 5.1 The Massachusetts Military Reservation (MMR) is located on the "upper" western portion of Cape Cod in Barnstable County, Massachusetts, approximately 60 miles south of Boston. The towns of Bourne, Falmouth, Sandwich and Mashpee are within and border upon the MMR, which occupies almost 22,000 acres.
- 5.2 Military use of the Area, now known as the MMR, has occurred since 1911. Since 1935, the MMR has been used for military training and maneuvers, military aircraft operations, and maintenance and support activities. The most intensive periods of activity occurred between 1940-1946 and 1955-1970.
- 5.3 In 1940, the U.S. Army signed a ninety-nine (99) year lease with the Commonwealth for the use of MMR (originally called Camp Edwards). The lease signed between the United States and the Commonwealth placed complete control of Camp Edwards with the United States. The lease did not provide the Commonwealth with a right to break or revise the lease in any way. In 1953, Congress approved the transfer of the post to the Department of the Air Force, for the purpose of operating an air base and supporting facilities. The Air Force held the primary lease with the Commonwealth from 1953-1974. From 1953 to 1974 the Air Force sub-leased the 14,000 acres of Camp Edwards back to the Army. In 1974, the Department of Defense reorganized control of MMR. The Air Force deleted approximately 16,000 acres from its lease with the Commonwealth. The Commonwealth, contemporaneously with the deletion of property from the Air Force lease, signed separate leases with the U.S. Army for 14,000 acres at MMR and the Department of Transportation (Coast Guard) for 1,400 acres at MMR. At the same time, the Commonwealth conveyed 750 acres of MMR to the Veterans Administration to be used as a National Cemetery. In 1973, the Air Force licensed the Massachusetts Air National Guard (ANG) to use and occupy Otis Air Force Base, and in 1975, the Army licensed the Massachusetts Army National Guard to use and occupy Camp Edwards.
- 5.4 Each of the three U.S. federal agencies, Army, Air Force and Coast Guard, are separate and distinct lessors from the Commonwealth. The Veterans Administration owns 750 acres

and the Air Force owns approximately 1300 acres at MMR. This situation has created a military complex with no single agency responsible for control of the Site on a day-to-day basis or for CERCLA remedial activities. However, based upon provisions in the Air Force lease, statutory authority of the National Guard Bureau (NGB), and a series of formal and informal agreements between the tenants at MMR, the NGB has acquired the primary responsibility of operating and maintaining the MMR and over CERCLA Response Actions at MMR.

- 5.5 The MMR can be divided into three main areas: (1) the 5,000 acre cantonment located in the southern portion of the reservation where Army, Air National Guard, and Coast Guard facilities include aircraft runways, access roads, aircraft and vehicle maintenance facilities, and housing and personnel support facilities; (2) the 14,000 acre range which is used for a U.S. Air Force Radar Installation and general Army National Guard and Army Reserve training and maneuvers; and (3) the 750 acre Veterans Administration Cemetery, located on the western edge of MMR. A map contained in Attachment (1) shows the various areas within MMR.
- 5.6 The cantonment Area has been the most actively used Area of the MMR. During World War II, U.S. Army operations in the cantonment included servicing large motor pools, some with as many as 400 vehicles. Between 1955 and 1972, when U.S. Air Force operations were at a peak, the MMR experienced its highest levels of activity in the cantonment. The generation, use and disposal of petroleum products, aviation and motor fuels, solvents, spent acids, laboratory chemicals and wastes were widespread.
- 5.7 In 1978, the Town of Falmouth detected contaminants in a drinking water well located approximately 7,500 feet south of the MMR wastewater treatment plant. As a result of subsequent investigations, the DEP ordered the use of the Falmouth well discontinued in 1979. In an agreement with the Town, the NGB paid for the connection to the municipal water system.
- 5.8 In 1982, the DOD initiated the Installation Restoration Program (IRP) at the Otis Air National Guard portion of MMR. The IRP is designed to identify and evaluate potential hazardous waste sites at military bases. Phase I included a records search of past disposal activities, while Phase II, which occurred in 1983 and 1984, included groundwater and soil sampling of areas identified during Phase I. In 1985, the DOD closed one of two on-site wells serving the majority of MMR residents when sampling detected elevated levels of volatile organic compounds in the MMR water supply.

- 5.9 The NGB expanded the IRP program in 1986 to include investigations of hazardous waste sites at all military units at MMR. Also in 1986, the DEP began to actively review and oversee the expanded IRP program and to meet with NGB personnel to evaluate site investigation reports. The Phase I portion included a records search, an evaluation of past records searches and sampling and analysis results, and interviews with past and present MMR personnel. This resulted in the identification by the NGB of seventy-four (74) locations where contamination was suspected to exist. The Parties acknowledge that this list may require amendment.
- 5.10 In late 1986, Phase II site inspections commenced at twenty-one (21) Study Areas (SA). These inspections included installation of groundwater monitoring wells, and groundwater, soil, surface water and sediment sampling. Sampling results indicated the presence of volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs), polynuclear aromatic hydrocarbons (PAHs), and other semi-volatile organic compounds, waste oils and metals.
- 5.11 In March 1987, the DEP issued a Notice of Responsibility (NOR) to the tenants of MMR, notifying the agencies of their responsibility to conduct hazardous waste site assessment activities and Remedial Actions at MMR in accordance with M.G.L. Ch. 21E.
- 5.12 In 1986 and 1987, at the request of the Town of Mashpee and of residents from the Briarwood section of Mashpee (Briarwood), which is located on the southern portion of MMR, the Barnstable County Health and Environmental Department sampled private wells in this Area. Sampling results indicated VOC levels for trichloroethylene (TCE) and tetrachloroethylene (PCE) exceeding federal and State drinking water standards in seven (7) wells. The DEP issued a letter to the NGB requesting that bottled water be provided to all residents in Briarwood, and that arrangements be made to develop a permanent drinking water supply. In 1988 the NGB proposed to supply drinking water to seven (7) homes in Briarwood where contamination concentrations exceeded the federal maximum contaminant levels (MCLs). The DEP considered this response to be inadequate and provided bottled water to the entire Briarwood community threatened by VOC contamination of its water supply from 1988 to July 1990, when a new connection to the Falmouth, Massachusetts water supply was to be completed. A new water supply connection to the Falmouth water system has now been completed.
- 5.13 In July 1989, EPA proposed the MMR be placed on the National Priorities List (NPL). EPA formally added the MMR site to the NPL on November 21, 1989.

- 5.14 Subsequent to the final listing on the NPL, investigations at MMR have resulted in the identification of additional source areas and groundwater plumes which will require further investigation (see referenced lists in Sections 5.24 and 5.25).
- 5.15 For the purposes of this Agreement, the foregoing constitutes a summary of findings upon which this Agreement is based. None of the facts related herein shall be considered an admission by any party, and they shall not be used by any person related or unrelated to this Agreement for purposes other than determining the basis of and enforcing this Agreement.

B. DETERMINATIONS

- 5.16 The Massachusetts Military Reservation (MMR) was listed on the National Priorities List (NPL) update of November 21, 1989, 54 Fed. Reg. 134 and is therefore subject to the special provisions for Federal Facility NPL sites in CERCLA § 120.
- 5.17 The MMR is located within or bounded by the towns of Bourne, Falmouth, Sandwich and Mashpee, Massachusetts and is, or has been, at all times relevant to this Agreement controlled by the United States of America.
- 5.18 The MMR is a facility under the jurisdiction, custody, or control of the DOD, within the meaning of Executive Order 12580, 52 Fed. Reg. 2923, January 29, 1987 and within the meaning of DERP, 10 U.S.C. § 2701 et seq., and CERCLA § 120, 42 U.S.C. §9620. The National Guard Bureau (NGB) is authorized to act on behalf of the Secretary of Defense for all functions delegated by the President through Executive Order 12580 which are relevant to this Agreement.
- 5.19 In 1982, the DOD initiated an Installation Restoration Program (IRP) designed to identify and remediate Hazardous Substance contamination on the Otis Air Force Base portion of MMR that threatened the public health, welfare and environment. The NGB took over the IRP program in 1986 and expanded it to include investigations of the entire MMR. These investigations identified multiple areas where Hazardous Substance contamination was suspected to exist. A description of the areas identified during the investigations is included below at Paragraph 5.24. In addition to these areas, subsequent investigations have identified distinct areas of groundwater contamination, (also referred to as groundwater plumes), some of which stem from one or more of the areas identified in Paragraph 5.24 below

and others of which have no known source at this time. A list of these plumes is included below in Paragraph 5.25.

- 5.20 In 1996, the USAF assumed federal "lead agency" status for the Response Action obligations of the federal Parties, excluding EPA, arising under this Agreement.
- 5.21 The authority of the NGB to exercise the delegated Removal authority of the President pursuant to CERCLA § 104, 42 U.S.C. § 9604 is not altered by this Agreement.
- 5.22 The actions to be taken pursuant to this Agreement are reasonable and necessary to protect the public health, welfare and environment.
- 5.23 On the basis of the facts described in Section V of this Agreement, EPA has determined that:
- (a) The Site is a Federal Facility pursuant to CERCLA § 120(a), 42 U.S.C. § 9620;
 - (b) The Site is a Facility within the meaning of § 101(9) of CERCLA, 42 U.S.C. § 9601(9);
 - (c) Hazardous Substances, pollutants, or contaminants within the meaning of CERCLA §§ 101(14) and 104(a)(2), 42 U.S.C. §§ 9601(14) and 9604(a)(2), including, but not limited to, trichloroethylene, tetrachloroethylene, PCBs, benzene, xylene and toluene have been disposed of and have come to be located at the Site;
 - (d) There have been releases and there continue to be releases and threatened releases of Hazardous Substances, pollutants, or contaminants into the environment within the meaning of CERCLA §§ 101(22), 104, 106, and 107, 42 U.S.C. §§ 9601(22), 9604, 9606, and 9607, ~~at~~ and from the Site;
 - (e) With respect to those releases and threatened releases at the Site, the NGB is a responsible person within the meaning of CERCLA § 107, 42 U.S.C. § 9607;
 - (f) The NGB is a "Federal agency " as defined in Section 1004(4) of RCRA, 42 U.S.C. § 6903(4) and a "person" as defined in Section 1004(15) of RCRA, 42 U.S.C. § 6903(15), as amended by Section 103 of the Federal Facility Compliance Act of 1992;
 - (g) Constituents of fuels and other petroleum products including benzene, toluene, ethyl benzene and xylene (petroleum constituents) and the fuel

additive ethylene dibromide (EDB) that have been disposed at the Site are "solid wastes" within the meaning of RCRA 1004(27), 42 U.S.C. § 6903(27) and "hazardous wastes" within the meaning of RCRA 1004(5), 42 U.S.C. § 6903(5);

- (h) The aviation and motor fuels disposed at the Site are solid wastes within the meaning of RCRA § 1004(27), 42 U.S.C. § 6903(27);
- (i) Petroleum constituents and EDB are present in groundwater at the Site at levels exceeding State and Federal drinking water standards. In addition, groundwater containing EDB is upwelling into surface water, resulting in detections of EDB in surface water at levels exceeding human health risk levels;
- (j) The presence of petroleum constituents and EDB in groundwater at levels exceeding drinking water standards can adversely affect human health through inhalation, ingestion and dermal contact. In addition, the presence of EDB in surface water may pose a risk to human health through inhalation, ingestion and dermal contact as well as may adversely affect the health of ecological receptors which come in contact with these water bodies;
- (k) Therefore, the presence of petroleum constituents and EDB in groundwater at levels exceeding drinking water standards and the presence of EDB in surface water at levels exceeding human health risk levels may present an imminent and substantial endangerment to health or the environment;
- (l) The potential endangerment stems from the past handling, storage and/or disposal at MMR of petroleum products and aviation and motor fuels containing petroleum constituents and EDB;
- (m) DoD entities (who for purposes of all terms of this Agreement are represented by the NGB) have contributed to such handling, storage and/or disposal during the conduct of their operations at MMR; and
- (n) The actions required by this Agreement are necessary to respond to the potential endangerment.

5.24 As of the Effective Date of this Agreement and all subsequent amendments, the following Study Areas and Areas of Contamination (AOC) have been identified by the Parties:

<u>Site #</u>	<u>AOC/IRP Identifier</u>	<u>Description</u>
1	SD-1	Storm Drainage Disposal Site
2-7	SD-2/FS-6/ FS-8/FS-10/ FS-11/PFSA	Storm Drainage Disposal Site/Airfield Apron/Airfield Apron/Fuel Storage Area /Petroleum Fuel Storage Area
8	SD-4	Storm Drainage Disposal Site
9-10	SD-5/FS-5	Storm Drainage Disposal Site/Apron Near Aquafarm
11	LF-1	MMR Main Sanitary Landfill (incl. North West Operable Unit)
12	LF-3	Northeast Landfill
13	LF-4	John's Pond Dump-Off Base
14	LF-5	VA Cemetery Rubble Landfill
15	LF-6	US Navy Rubble Landfill
16	LF-7	Radon Tube Burial Landfill
17	CS-1	North Truck Road Motor Pool
18	CS-2	East Truck Road Motor Pool
19-20	CS-3/FS-23	South Truck Road Motor Pool/South Truck Road Fuel Spill
21	CS-4	West Truck Road Motor Pool
22	CS-5	Former Refueler Maintenance Shop B/3437
23-24	CS-6/FS-22	Current ANG Maintenance Shop B/754/ANG Motor Pool
25	CS-7	OMS-6, B/2806
26-27	CS-8/FS-21	OMS-22, S-2/Current Product Tank 90
28	CS-9	Former Main USAF Motor Pool- 4100 Block
29-30	CS-10/FS-24	UTES/BOMARC Site-4600 Block/BOMARC Site/CS-10 Tank Wash Operable Unit

31	CS-11	ARNG/ANG Pest Control Shop, B/1131
32	CS-12	VA Cemetery Roads and Grounds Shop
33	CS-13	Former Contractor's Yard near Well J
34	CS-14	Building 156 Leach Pit
35	CS-15	Former Engine Run-up Area
36-37	CS-16/CS-17	Sewage Treatment Plant/Former Sewage Sludge Disposal Area/Drum Disposal Operable Unit
38	CS-18	Propellant Burning Area
39	FS-1	Aviation Gasoline (AVGAS) Fuel Valve Test Dump Site
40	FS-2	Railroad Fuel Pumping Station
41	FS-3	Johns Pond Road Fuel Dump Site
42	FS-4	Current Product Tanks 100/101
43	FS-7	Current Product Tank 115
44	FS-9	Current Product Tank 108
45	FS-12	Underground Fuel Line Range
46	FS-13	Underground Fuel Line Cantonment
47	FS-14	Range E-3 Spill
48	FS-15	Runway #5 Fuel Spill
49	FS-16	Army Helicopter Maintenance B/2816
50	FS-17	Former WW II Motor Pool/Fuel Transfer Point
51	FS-18	Fuel Transfer Point
52	FS-19	Former Motor Gasoline (MOGAS)/Fuel Storage & Transfer Point
53	FS-20	Current Product Tank 88
54	FTA-1	Current Fire Training Area (CFTA)
55-56	FTA-2/LF-2	Former Fire Training Area (1948-1958)/ Original Base Landfill

57-58	FTA-3/SD-3	Former Fire Training Area (1956-1958)/Storm Drainage Disposal Site
59	CY-1	Former Army/VA Hospital Coal Yard
60	CY-2	Former USAF/ANG Coal Storage Yard
61	CY-3	Former Army/VA Hospital Coal Yard
62	CY-4	Current Coal Storage Yard
63	CS-1(USCG)	USCG Transmitter Site
64	CS-2(USCG)	Hangar 3170 Areas (USCG)
65	CS-3(USCG)	BX Service Station (USCG)
66-67	CS-4/FS-1 (USCG)	Hangar 128 Area (USCG)/Hangar 128 Fuel Spill(USCG)
68	CS-5(USCG)	USCG Carpentry Shop
69	CS-6(USCG)	Other USCG Maintenance Shops
70	CS-7(USCG)	USCG Dry Cleaning Facility
71	FS-2(USCG)	Hot-Mix Asphalt Plant (USCG)
72	LF-1(USCG)	Rubble Landfill (USCG)
73	LF-2(USCG)	Rubble Landfill (USCG)
74	LF-3(USCG)	Rubble Landfill (USCG)
75	FS-25*	Building 167 Area Fuel Spill
76	FS-26*	USCG Building 3444 Fuel Tank Area
77	FS-27*	Connery Ave. Telephone Line Soil Excavation
78	CS-19*	Impact Range Chemical Dump Site
79	CS-8 (USCG) *	Potential Disposal Site North of USCG Transmitter Station (CS-1 (USCG))
80	CS-22*	Potential Disposal Site South of Dolan Road

NOTE: * denotes the Study Area identified since the completion of the Preliminary Assessment.

5.25 In addition to the Study Areas and Areas of Contamination listed in Section 5.24 above, the following groundwater plumes (some of which stem from one or more of the areas identified in Paragraph 5.24 above and others of which have no known source at this time) have been identified as Areas of Contamination by the Parties:

1. LF-1 Groundwater Operable Unit
2. Ashumet Valley Groundwater Operable Unit
3. CS-10 Groundwater Operable Unit
4. FS-12 Groundwater Operable Unit
5. SD-5 Groundwater Operable Unit
6. Eastern Briarwood Groundwater Operable Unit
7. Western Aquafarm Groundwater Operable Unit
8. FS-1 Groundwater Operable Unit
9. CS-4 Groundwater Operable Unit
10. FS-28 Groundwater Operable Unit
11. CS-20 Groundwater Operable Unit
12. CS-21 Groundwater Operable Unit
13. FS-29 Groundwater Operable Unit
14. FS-13 Groundwater Operable Unit

VI. WORK TO BE PERFORMED; RCRA/CERCLA INTEGRATION

6.1 The Parties agree to perform the applicable tasks, obligations and responsibilities described in this Agreement and the Comprehensive Plan in accordance with CERCLA, CERCLA guidance and policy, the NCP, Executive Order 12580, applicable State laws and all terms and conditions of this Agreement including documents prepared and incorporated in accordance with Section VII, (Consultation with EPA). As detailed more fully in subsections 6.8 - 6.10 below, the Parties agree that all actions which are being or will be undertaken pursuant to authority under RCRA § 7003 will be performed as part of CERCLA Response Actions that are being or will be undertaken at the Site. All such actions shall be subject to all terms and conditions of this Agreement. For the purposes of this Agreement only, the NGB shall be considered the lead agency as described in Executive Order

12580. The NGB shall be primarily responsible for investigation, design, construction, and Operation and Maintenance of all Response Actions at the Site.

- 6.2 With respect to integration of past or ongoing Work into Work required by this Agreement, it is the intent of the Parties that documents completed and data generated prior to the Effective Date of this Agreement be utilized as elements of the SI and RI/FS documents required under this Agreement to the maximum extent practicable without violating CERCLA, CERCLA guidance and policy, the NCP, Federal and State ARARS; and without jeopardizing the technical integrity of any SI or RI/FS based upon such data. The NGB need not halt currently ongoing Work but may be obligated to modify or supplement Work previously done to produce a final product which meets the requirements of this Agreement.
- 6.3 In order to facilitate and expedite the Parties' intent as described in Paragraph 6.2, the EPA has reviewed the documents and data generated by the NGB prior to the Effective Date of the Agreement. Identified in Appendix I is a list of the documents reviewed and the action(s) required to complete or modify such documents in order to satisfy the requirements of Paragraph 6.2, and the general requirements of this Agreement. Identified in Appendix II are documents completed prior to the Effective Date of this Agreement that EPA will review in accordance with the procedures outlined in Section VII below, within 120 days of the Effective Date of this Agreement. These reviews have been completed.
- 6.4 The NGB agrees to undertake, seek adequate funding for, fully implement and report on the following tasks, with participation of the Parties as set forth in this Agreement and the Comprehensive Plan:
- (a) Site Inspections of all Study Areas consistent with this Agreement and the Comprehensive Plan;
 - (b) Remedial Investigations of all Areas of Contamination;
 - (c) Feasibility Studies for all Areas of Contamination;
 - (d) **Proposed** Plans and RODs for all Areas of Contamination;
 - (e) Remedial Actions and Remedial Designs for all Areas of Contamination consistent with the Record of Decision; and
 - (f) Operation and Maintenance of Remedial Actions at

the Areas of Contamination consistent with the Record of Decision.

6.5 The Parties agree to:

- (a) Make their best efforts to expedite the performance of their respective responsibilities under this Agreement; and
- (b) Conduct all activities under this Agreement so as to protect the public health, welfare and the environment.

6.6 Any location on the Site which is identified by a Party pursuant to this Agreement and the Comprehensive Plan as a Study Area or AOC after the Effective Date of this Agreement shall be added to the list of Study Areas and AOC in Paragraph 5.24 or 5.25 as an additional Study Area or Area of Contamination to be investigated and remediated pursuant to the requirements pertaining to Study Areas or AOC under this Agreement and the Comprehensive Plan. Notice to the public of all AOC identified by the Parties after the Effective Date of this Agreement shall be provided pursuant to Paragraph 28.3 of this Agreement.

6.7 With respect to the Work to be completed at the Site, the NGB agrees that all Work conducted pursuant to this Agreement, and the Comprehensive Plan, shall be funded by the NGB. The NGB shall conduct, and be responsible for, completion of all Work activities required at the Site pursuant to this Agreement and the Comprehensive Plan. While not a Party to this Agreement, the USCG has agreed to jointly fund portions of the work pursuant to a separate agreement entitled the "United States Coast Guard and United States National Guard Bureau Memorandum of Agreement for the Massachusetts Military Reservation, Cape Cod, Massachusetts," which became effective on February 6, 1995.

6.8 The Parties intend to integrate all CERCLA response obligations which relate to the release(s) of hazardous substances, hazardous wastes, solid wastes, pollutants or contaminants covered by this Agreement and all obligations arising under RCRA § 7003 to address contamination resulting solely from the disposal of petroleum products (including all actions to address petroleum constituents and/or additives) into this comprehensive Agreement. Therefore, the Parties intend that activities covered by this Agreement will be deemed to achieve compliance with CERCLA, 42 U.S.C. § 9601 et seq.; to satisfy the requirements of Section 7003 of RCRA, 42 U.S.C. § 6973, and to meet or exceed all applicable or relevant and appropriate Federal and State laws and regulations, to the extent required by Section 121 of CERCLA, 42 U.S.C. § 9621.

- 6.9 Based upon the foregoing, the Parties intend that any Remedial Action selected, implemented and completed in accordance with this Agreement shall be deemed by the Parties to be protective of human health and the environment such that remediation of releases covered by this Agreement shall obviate the need for further action under RCRA. The Parties agree that with respect to releases of hazardous waste covered by this Agreement, RCRA shall be considered an applicable or relevant and appropriate requirement pursuant to Section 121 of CERCLA.
- 6.10 The Parties recognize that on-going hazardous waste management activities at the MMR may require the issuance of permits under Federal and State laws. This Agreement does not affect the requirements, if any, to obtain such permits. However, if a permit is issued to the NGB for ongoing hazardous waste management activities at the Site, EPA shall reference and incorporate any appropriate provisions, including appropriate schedules (and the provision for extension of such schedules), of this Agreement into such permit. The Parties intend that the judicial review of any permit conditions which reference this Agreement shall, to the extent authorized by law, only be reviewed under the provisions of CERCLA.

VII. CONSULTATION WITH EPA

Review and Comment Process for Draft and Final Documents

7.1 Applicability:

The provisions of this Section establish the procedures that shall be used by the Parties to provide each other with appropriate notice, technical support, review, comment, and response to comments regarding documents, specified herein and in the Comprehensive Plan as either Primary or Secondary Documents. In accordance with CERCLA § 120, 42 U.S.C. § 9620, and 10 U.S.C. § 2705, the NGB shall be responsible for issuing Primary and Secondary Documents to EPA, unless otherwise agreed to by all Parties in writing. As of the Effective Date of this Agreement, all draft and final reports for any deliverable document(s) identified herein, including any SI, RI/FS and RD/RA documents relating to this Site prepared prior to the Effective Date of this Agreement, shall be prepared, distributed and subject to dispute in accordance with Paragraphs 7.2 through 7.9 below. The designation of a document as "draft" or "final" is solely for purposes of consultation with EPA in accordance with this Section. Such designation does not affect the obligation of the Parties to issue documents, which may be referred to herein as "final", to the public for review and comment as appropriate and as required by law.

7.2 Process for Primary Document Review:

Primary Documents:

- (a) Primary Documents include those reports specified in Paragraph 7.2(b) through 7.2(e). Primary Documents shall be initially issued by the NGB in draft form subject to review and comment by EPA. Following receipt of comments on a particular draft Primary Document, the NGB shall respond to the comments received, the EPA shall then respond to the NGB comments, the NGB shall then issue a draft final Primary Document subject to Dispute Resolution. During EPA and NGB review and comment on documents pursuant to Paragraphs 7.6(e) and 7.6(f) of this Agreement, the NGB will continue Work on succeeding documents pertaining to the same Study Area, Area of Contamination, or Operable Unit. Where Dispute Resolution has been invoked on a document, work on such succeeding documents that are directly dependent upon the document in dispute may be stopped until the dispute resolution process has reached a final decision. The draft final Primary Document will become the final Primary Document either 30 days after issuance if Dispute Resolution is not invoked, or as modified by decision of the Dispute Resolution process;
- (b) Prior to the Effective Date of this Agreement, the NGB has forwarded the Primary Documents found in Appendix II to EPA. Within 120 days of the Effective Date of the Agreement EPA will review and comment on all documents listed in Appendix II. (These reviews have been completed);
- (c) The NGB shall complete and transmit within 120 days of the signing of this Agreement, or no later than thirty (30) days after any revision or amendment, the applicable draft document for the following Primary Document to EPA for review and comment in accordance with the provisions of this Section:
 - (i) Comprehensive Plan
- (d) The NGB shall, no later than thirty (30) days after any revision or amendment of the Community Relations Plan/Community Involvement Plan, complete and transmit the applicable draft document for the following Primary Document to EPA for review and comment in accordance with the provisions of this Section:

- (i) Amendment(s) to Community Relations Plan/Community Involvement Plan
- (e) The NGB for each AOC or Study Area shall complete and transmit the applicable draft document for the following Primary Documents to EPA for review and comment in accordance with the provisions of this Section:
 - (i) Decision Documents
 - (ii) RI/FS Work Plans (including QAPP, Health and Safety Plan, and any supplemental Scope of Work)
 - (iii) Remedial Investigations (including Risk Assessment)
 - (iv) Feasibility Studies
 - (v) Proposed Plan
 - (vi) Record of Decision(s) (ROD)
 - (vii) Final Design (including Remedial Action Work Plan, Construction Quality Assurance Project Plan and Construction Quality Control Plan)
 - (viii) Project Closeout Report
- (f) Only the draft final document for the Primary Documents identified above shall be subject to Dispute Resolution. The NGB shall complete and transmit draft Primary Documents in accordance with the Timetable and Deadlines established in Section XIV, (Deadlines and Schedules) of this Agreement.

7.3 Secondary Documents:

- (a) Secondary Documents include those documents that are discrete portions of the Primary Documents and are typically input or feeder documents. Secondary Documents shall be issued by the NGB in draft subject to review and comment by EPA. Although the NGB shall respond to comments received from the EPA, the draft Secondary Documents may be finalized in the context of the corresponding Primary Documents;
- (b) The NGB shall complete and transmit draft documents for the following Secondary Documents to

EPA for review and comment in accordance with the provisions of this Section:

- (i) Site Inspection Work Plans
 - (ii) Site Inspection Reports
 - (iii) Initial Screening of Alternatives Letters
 - (iv) Remedial Design Scope of Work
 - (v) 60% Design Presentation
 - (vi) 95% Design Reports
 - (vii) Technology and ARAR Handbook
 - (viii) Treatability and Pilot Study Work Plans
 - (ix) Interim Data Submittals as Requested by the Project Managers
 - (x) Post-Screening Field Investigation Work Plans
 - (xi) Quarterly Progress Reports
- (c) Although the EPA may comment on the draft reports for the Secondary Documents listed above, such documents shall be subject to Dispute Resolution only at the time the corresponding draft final Primary Document is issued as set forth in 7.2(f) hereof. Dates shall be established for the completion and transmission of draft Secondary Documents.

7.4 Meetings of the Project Managers on Development of Reports:

The Project Managers shall meet in person every sixty (60) days, except as otherwise agreed by the Parties, to review and discuss the progress of Work being performed at the Site, including progress on the Primary and Secondary Documents. Regularly scheduled Project Manager meetings held in conjunction with TEAC meetings may satisfy this requirement if the Project Managers agree. Project Manager meetings may be held more frequently than sixty (60) days or TEAC meetings, but not less than thirty (30) days apart, unless otherwise agreed upon by the Project Managers. Prior to preparing any draft report specified in Paragraphs 7.2 and 7.3 above, the Project Managers shall meet in an effort to reach a common understanding with respect to the contents of the draft document.

7.5 Identification and Determination of Potential ARARs:

- (a) For those Primary Documents or Secondary Documents that consist of, or include ARAR determinations, the Parties' Project Managers shall, prior to the issuance of a draft document, meet to identify and propose, to the best of their ability, all potential ARARs pertinent to the report being addressed. Draft ARAR determinations shall be prepared by the NGB in accordance with CERCLA § 121(d)(2), 42 U.S.C. § 9621(d)(2), the NCP and pertinent guidance issued by EPA.
- (b) The NGB has compiled Federal and State legally applicable or relevant and appropriate requirements (ARARs) and produced a "Remedial Technology Evaluation And Applicable Or Relevant And Appropriate Requirements Handbook" (ARARs Handbook). The ARARs Handbook lists chemical-specific, location-specific, and action-specific potential ARARs for the Site. Subject to CERCLA, the NCP, EPA guidance and subparagraph (a) above the ARARs handbook may serve as an initial resource for all Primary and Secondary Documents but shall not be solely relied upon to determine all appropriate ARARs. In identifying potential ARARs, the Parties recognize that actual ARARs can be identified only on a Site-specific basis and that actual ARARs depend on the specific Hazardous Substances, pollutants and contaminants at the Site and AOC, the particular actions proposed as a remedy and characteristics of the Site and AOC. The Parties recognize that ARAR identification is necessarily an iterative process and that potential ARARs must be reexamined throughout the RI/FS process until a ROD is issued.
- (c) The Parties recognize that the Commonwealth of Massachusetts has a statutory role under CERCLA §121 in connection with ARARs and will encourage the Commonwealth to submit its views on ARARs as early as possible in the Remedial Investigation process.

7.6 Review and Comment on Draft Documents:

- (a) The NGB shall complete and transmit each draft Primary Document to EPA on or before the corresponding Deadline established for the issuance of such documents;

The NGB shall complete and transmit each draft Secondary Document in accordance with the dates to

be established for the issuance of such Secondary Documents;

- (b) Unless the Parties mutually agree in writing to another time period, all draft documents shall be subject to the review times specified in 7.6(e). Review of any document by the EPA may concern all aspects of the document (including completeness) and may include, but is not limited to, technical evaluation of any aspect of the document, and consistency with CERCLA, the NCP, and any pertinent guidance or policy issued by the EPA and with applicable State law. At the request of the EPA Project Manager, to expedite the review process, the NGB shall make an oral presentation of the document to the Parties at the next scheduled meeting of the Project Managers following the transmittal of the draft document or within twenty-one (21) days following the request, whichever is sooner. Comments by the EPA shall be provided with adequate specificity so that the NGB may respond to the comments and, if appropriate, make changes to the draft document. Comments shall refer to any pertinent sources of authority or references upon which the comments are based, and upon request of the NGB, the EPA shall provide a copy of the cited authority or reference. On or before the close of the comment period, EPA shall transmit by next day mail, hand delivery, facsimile or certified letter its written comments to the NGB;
- (c) Representatives of the NGB shall make themselves, and NGB contractors, if appropriate, readily available to EPA during the comment period for purposes of informally responding to questions and comments on draft documents;
- (d) In commenting on a draft document which contains a proposed ARAR determination, EPA shall include a statement of whether they object to any portion of the proposed ARAR determination. To the extent that EPA objects, it shall explain in detail the basis for the objection(s) and shall identify any ARARs which it believes are not properly addressed in the proposed ARAR determination. If the NGB rejects an EPA ARAR determination, it shall explain in detail the basis for its rejection;
- (e) EPA and NGB agree to the following review and comment periods for all draft Primary Documents described in this Section for which public comment periods are not required by the Community

Relations Plan/Community Involvement Plan:

- (1) EPA initial review-----45 days
 - (2) NGB response to EPA review---30 days
 - (3) EPA review of NGB response to EPA
initial review-----30 days
 - (4) NGB delivery of final document to
Congressional delegations----14 days
after 7.3(e) (3)
 - (5) NGB release of final report to public
after 7.3(e) (4)-----7 days.
- (f) EPA and NGB agree to the following review and
comment periods for all draft Primary Documents
described in this Section for which public comment
periods are required by the Community Relations
Plan/Community Involvement Plan:
- (1) EPA initial review----- 45 days
 - (2) NGB response to EPA review --30 days
 - (3) EPA review of NGB response to
EPA initial review-----30 days
 - (4) Public comment on draft final document
pursuant to the Community Relations
Plan/Community Involvement Plan
 - (5) EPA review of public comment and
submittal to NGB-----15 days
 - (6) NGB response to public comment and
submittal to EPA-----30 days
 - (7) EPA review of NGB responsiveness
summary -----15 days
 - (8) NGB delivery of final document to
Congressional delegation-----14 days
after 7.6(f) (7)
 - (9) NGB issuance of final report---7 days.
after 7.6(f) (7)
- (g) During review of a document or report pursuant to
this Section, the NGB will continue currently
ongoing Work pertaining to such document or report
except as otherwise provided in CERCLA, the NCP

and this Agreement. To the maximum extent practicable, it is the intent of the Parties that review of such documents or reports pursuant to this Section will not delay the progress of Work at the Site.

- (h) The review and comment periods established in this Section are based on the intent of the NGB to identify and discuss with the EPA the following as soon as it is available to the NGB: (1) analytical data, including field study results and draft documents and reports; and (2) all significant issues relating to the Work that may require, or impact upon, EPA approval or concurrence of a document or report. Review and comment periods established by this Section of the Agreement shall be amended if it is determined by a Party that such amendment is necessary to ensure the purposes of this Agreement.
- (i) Any Party may extend any review or comment period set out in Paragraph 7.6(e) hereof for either responding to comments on a draft document or for issuing the draft final Primary Document for thirty (30) days, by providing a timely and good faith written notice to the other Parties. In appropriate circumstances, this time period may be further extended in accordance with Section XV (Extensions).

7.7 Availability of Dispute Resolution for Draft Final Primary Documents:

- (a) Dispute Resolution shall be available to the Parties for draft final Primary Document as set forth in Section XIII, (Dispute Resolution);
- (b) When Dispute Resolution is invoked on a draft final Primary Document, Work may be stopped in accordance with the procedures set forth in Section XIII, (Dispute Resolution).

7.8 Finalization of Reports:

The draft final Primary Document shall serve as the final Primary Document after opportunity for review and comment by the EPA, and if no party invokes Dispute Resolution regarding the document or, if invoked, at completion of the Dispute Resolution process should the NGB's position be sustained. If the NGB's position is not sustained in the Dispute Resolution process, the NGB shall prepare, within forty-five (45) days, a revision of the draft final Primary Document which conforms to the results of Dispute

Resolution. In appropriate circumstances, the time period for this revision period may be extended in accordance with Section XV (Extensions). Once final, a Primary Document shall be deemed incorporated into this Agreement and shall become an enforceable part hereof.

7.9 Subsequent Modifications of Final Reports and Additional Work:

- (a) Following finalization of any Primary Document pursuant to Paragraph 7.8 above, any party may seek to modify a report, including seeking additional field Work, pilot studies, computer modeling or other supporting technical Work based on new information (i.e, information that becomes available, or conditions that become known, after the document was finalized) that the requested modification is necessary. Any Party may seek such a modification by submitting a concise written request to the Project Manager of the other Party. The request shall specify the nature of the requested modification and how the request is based on new information.
- (b) In the event that a consensus is not reached by the Project Managers on the need for a modification, any Party may invoke Dispute Resolution to determine if such modification shall be conducted. Modification of a document shall be required **only** upon a showing that:
 - (1) The requested modification is based on significant new information; and
 - (2) The requested modification could be of significant assistance in evaluating impacts on public health, welfare or the environment, in evaluating the selection of remedial alternatives, or in protecting human health and the environment.

7.10 Nothing in this Section shall alter EPA's right to request the performance of Additional Work pursuant to the certification process described in Section XIX (EPA Certification). The NGB obligation to perform such Work must be established by either a modification of a report or document, pursuant to Paragraph 19.3, or by amendment to this Agreement. Any Additional Work determined to be necessary by the Parties is subject to the authority and obligations established in this Agreement and the Comprehensive Plan.

- 7.11 NGB shall provide to the Massachusetts Department of Environmental Protection (DEP) copies of all Primary and Secondary Documents and all notices required by this agreement at the same time such documents and notices are provided to EPA. DEP shall have the same period of time to review and comment on such documents and to respond to such notices as provided herein for EPA. NGB shall respond to comments from DEP within the same time period provided herein for NGB to respond to EPA comments. Since DEP is not a party to this agreement, Dispute Resolution pursuant to Section XII of the agreement will not be available to DEP.

VIII. PROJECT MANAGERS

- 8.1 Prior to the Effective Date of this Agreement, the Parties shall each designate a Project Manager for the purposes of overseeing implementation of this agreement. The Project Managers shall be responsible for ensuring implementation of the SI, RI/FS and RD/RA in accordance with the terms of the Comprehensive Plan and of this Agreement. Communications among all Parties on all documents, including reports, documents, comments, and other correspondence concerning the activities performed pursuant to this Agreement to the extent practicable, shall be directed by Section XXX, (Notices and Submissions).
- 8.2 The Parties may change their respective Project Managers. Such change shall be accomplished by notifying the other Parties in writing five (5) days in advance of the change.
- 8.3 The Parties' Project Managers shall meet and discuss progress as described in Paragraph 7.4. Although the NGB has ultimate responsibility for meeting its respective Deadlines, Schedules or Timetables, the EPA Project Manager shall endeavor to assist in this effort by scheduling meetings to address documents, reviewing reports, overseeing the performance of environmental monitoring at the Site, reviewing SI, RI/FS or RD/RA progress, and attempting to resolve disputes informally. At least one week prior to each scheduled progress meeting, the NGB will provide to the other Parties a draft agenda and summary of the status of the Work subject to this Agreement. The minutes of each progress meeting, with the meeting agenda and all documents discussed during the meeting (which were not previously provided as attachments), shall constitute a progress report, which will be sent to all Project Managers within thirty (30) business days after the meeting ends. If an extended period occurs between Project Manager progress meetings, the Project Managers may agree that the NGB shall prepare an interim progress report and provide it to the other Parties. The report shall include the information

that would normally be discussed in a progress meeting of the Project Managers. Other meetings shall be held more frequently upon request by any Project Manager.

- 8.4 Field modifications to the implementation of a field program within the scope of the Work Plan may be made after verbal agreement between the Parties' Project Managers. The Parties' Project Managers shall confirm the verbal agreement in writing within five (5) days after the verbal agreement is reached. Field modifications to a Work Plan or Sampling and Analysis Plan may be requested by any Project Manager and shall be in writing on a Field Change Request form (FCR), signed and submitted to the other Project Managers for concurrence. The approved FCR shall be included as a part of the next progress report. No Project Manager may direct a government contractor without approval of the appropriate Government Contracting Officer.
- 8.5 If the Parties agree to a field modification pursuant to Paragraph 8.4 above, within five (5) business days following such modification, the Party requesting the modification shall prepare a memorandum detailing the modification and the reasons therefore and shall provide or mail a copy of the memorandum to the other Parties for signature and return. Modifications of Work not provided for in Paragraph 8.4 of this Section must be approved in accordance with Paragraph 7.9 of this Agreement.
- 8.6 If agreement cannot be reached on the proposed field modification to Work discussed in paragraph 8.4 above, the Dispute Resolution provisions of Section XIII of this Agreement may be invoked by the Party requesting the modification by submitting a written statement to the other Parties in accordance with Section XIII.
- 8.7 The Project Manager for the NGB shall be responsible for day-to-day field activities at the Site. The NGB Project Manager or other designated employee of the NGB shall be physically present at the Site or reasonably available to supervise Work during implementation of the Work performed at the Site pursuant to this Agreement. For all times that such Work is being performed, the NGB Project Manager shall inform the command post at MMR and the other Project Managers of the name and telephone number of the designated employee responsible for supervising the Work. The absence of the EPA Project Manager from the Site shall not be cause for Work stoppage or delay, unless the Project Managers agree otherwise in writing.
- 8.8 Each Parties' Project Manager shall be responsible for ensuring that all communications received from the other Project Managers are appropriately disseminated to and processed by the Party which each represents.

- 8.9 The Parties shall transmit Primary and Secondary Documents and all notices required herein by next day mail, hand delivery, facsimile or certified letter to the Project Managers specified in Paragraph 30.1. Time limitations shall commence upon receipt. The NGB shall provide EPA with ten (10) copies of each Primary and Secondary document.
- 8.10 The authority of the Project Managers shall include, but is not limited to:
- (a) Taking samples and ensuring that sampling and other field work is performed in accordance with the terms of any final work plan and QAPP;
 - (b) Observing, and taking photographs and making such other reports on the progress of the work as the Project Managers deem appropriate, subject to the limitations set forth in Section IX (Access) hereof;
 - (c) Reviewing records, files and documents relevant to the work performed; and
 - (d) Determining the form and specific content of the Project Manager meetings and of progress reports based on such meetings.

IX. ACCESS

- 9.1 Without limiting any authority conferred on EPA by law or regulation, EPA shall have access at all reasonable times to the Site and any property to which access is required to the extent the access to such property is controlled by or available to the NGB, for the purposes of conducting activity consistent with this Agreement, including but not limited to:
- (a) inspecting records, operating logs, contracts and other documents relevant to implementation of this Agreement;
 - (b) monitoring field activities of the ~~NGB and its~~ contractors, lessees, assigns, and employees to assure that such activities are carried out in compliance with the terms of this Agreement;
 - (c) verifying data or information submitted by the NGB to the EPA;
 - (d) conducting such tests that the EPA Project Manager deems necessary;
 - (e) assessing the need for planning additional Remedial Actions at the Site; and

- (f) Response Actions pursuant to paragraph 12.3 hereof.

The NGB shall honor all requests for access by the EPA conditioned upon the presentation of credentials showing the bearer's identity and that he is an employee or agent of EPA authorized to work on the Response Action. The NGB Project Manager or designee will provide briefing information, coordinate access and escort to restricted or controlled-access areas, arrange for base passes, ensure the requests for security clearance are promptly processed and coordinate any other access requests which arise. All access shall be obtained in a manner minimizing interference with military operations at the Site. NGB shall use best efforts to ensure that conformance with the requirements of this paragraph do not delay access.

- 9.2 NGB shall not require an escort to any Area of the site unless it is a restricted or controlled-access Area. Upon request of EPA, the NGB shall promptly provide a written list of current restricted or controlled-access areas. Nothing in this Agreement shall preclude the NGB Project Manager or his delegate from accompanying EPA employees, or its agents, whenever they are present on MMR.
- 9.3 The access by EPA, granted in Subsection 9.1 of this Section, shall be subject to those regulations necessary to protect national security, the health and safety of individuals on MMR or mission essential activities. Such regulations shall not be applied so as to unreasonably hinder EPA from carrying out its responsibilities and authority pursuant to this Agreement. In the event that access requested by EPA is denied by the NGB, the NGB shall provide an explanation within 48 hours of the reason of the denial, including reference to the applicable regulations, and, upon request, a copy of such regulations. The NGB shall expeditiously make alternative arrangements for accommodating the requested access. The Parties agree that this Agreement is subject to CERCLA section 120(j), 42 U.S.C. 9620(j), regarding the issuance of Site Specific Presidential Orders as may be necessary to protect national security.
- 9.4 If EPA requests access in order to observe a sampling event or other Work being conducted pursuant to this Agreement, and access is denied or limited, the NGB agrees to reschedule or postpone such sampling if the EPA so requests, until such mutually agreeable time when the requested access is allowed. The NGB shall not restrict the access rights of the EPA to any greater extent than the NGB restricts the access rights of its contractors performing Work pursuant to this Agreement.
- 9.5 To the extent that access is required to areas controlled by persons or entitles other than the NGB including other

branches of DOD, the NGB shall make best efforts to obtain access from the controlling Parties within thirty (30) calendar days after identification of the need for such access. "Best efforts" for the purposes of this Paragraph shall include, but not be limited to, identifying and locating the controlling parties, consistent with the funding provisions of this Agreement in Section XXV, arranging for the payment of money to obtain access agreements from the controlling party, exercising its authority under Section 104(e) of CERCLA 42 U.S.C. § 9604 (e), and seeking judicial assistance.

- 9.6 In the event that Site access is not obtained within the thirty (30) day time period set forth above, within fifteen (15) days after the expiration of the thirty (30) day period the NGB shall notify the EPA regarding the lack of the necessary access agreements and describe the efforts to obtain such access agreements. EPA may thereafter, consistent with their authority, assist the NGB in obtaining access. The NGB shall reimburse the EPA for all costs incurred by it in obtaining access, including, but not limited to costs incurred in acquiring all proper interests necessary for performance of Work or Additional Work. The NGB shall submit to EPA appropriate modifications to any Response Action affected by an inability to obtain proper access.
- 9.7 With respect to property referred to in Paragraph 9.5, upon which monitoring wells, pumping wells, or treatment facilities are to be located, or other Response Actions are to be taken pursuant to this Agreement, any access obtained shall provide (i) that no conveyance of title, easement, or other interest in the property shall be consummated without provisions for the continued operation of such wells, treatment facilities, or other Response Actions on the property, (ii) that the owners or lessees of any such property shall notify the NGB and EPA by certified mail, at least sixty (60) days prior to any conveyance of an interest in the property, of the property owner's or lessee's intent to convey and of the provisions made for the continued operation of the monitoring wells, treatment facilities, or other response actions pursuant to this Agreement; (iii) EPA shall have identical access as NGB.
- 9.8 The NGB shall take appropriate actions to ensure that all activities and Response or Remedial Actions to be undertaken pursuant to this Agreement will not be impeded or impaired by any transaction involving an interest or right in real property relating to MMR, including any fixtures located thereon owned by the United States. Such steps shall include but not be limited to providing the following in any deed, lease or other instrument evidencing such transaction:

- (i) notification of the existence of this Agreement;

- (ii) that the Parties shall have the rights of access to and over such property which are set forth in Section 9.1 above;
- (iii) provisions for compliance with applicable health and safety plans, and for the operation of any Response or Remedial Actions on such property (including, but not limited to, monitoring wells, pumping wells and treatment facilities);
- (iv) that no subsequent transaction relating to such property shall be made without provisions in the documents evidencing such transaction for such rights of access, for compliance with applicable health and safety plans, and for the operation of any Response or Remedial Actions on such property (including, but not limited to, monitoring wells, pumping wells and treatment facilities); and
- (v) that those involved in subsequent transactions relating to such property shall provide copies of the instrument evidencing such transaction to each of the Parties by certified mail within fourteen (14) days after the effective date of such transaction.

The NGB shall provide to EPA a copy of the generic form of any deed, lease or other instrument that it will use in any transaction involving an interest or right in real property relating to MMR at least thirty (30) days prior to the first use of such generic deed, lease or other instrument. In addition, in cases where the NGB is a party to such transaction, it shall provide to EPA copies of the executed deed, lease or other instrument evidencing such transaction within fourteen (14) days after the effective date of such transaction. Such generic form and such executed deed, lease, or other instrument shall include provisions which meet the requirements of Section 9.8 (i) through (v) above.

In the event of a dispute as to whether the provisions included in such generic form of deed, lease or other instrument meet the requirements of this Section 9.8, prior to the effective date of the first transaction relating to such generic form, the dispute may be referred directly to the SEC for dispute resolution pursuant to Section XIII of this Agreement. If dispute resolution is invoked in connection with such generic form of deed, lease or other instrument, the NGB will not execute the transaction instrument to which such generic form of deed, lease or other instrument relates until the completion of the dispute resolution process.

Any rights of access granted or other obligations imposed pursuant to this Paragraph shall expire with the termination of this Agreement pursuant to Section XXIV hereof.

- 9.9 A Party with access to the Site under this Section shall comply with all applicable health and safety plans.

X. DATA AND DOCUMENT AVAILABILITY

- 10.1 Each party shall make all sampling results, test results or other data generated through the implementation of this Agreement available to the other Party. If data validation is not completed within sixty (60) days after the last sample of a discrete sampling event is taken in the field, the EPA may request from the NGB and the NGB shall request from the appropriate source within 5 days of the EPA request, unvalidated data or results and the NGB shall forward such data or results to EPA within ten (10) working days after receipt by the NGB Project Manager. The NGB shall in accordance with Paragraph 6.5 use its Best Efforts including, but not limited to, whatever contract or legal rights it may have, to obtain raw and analyzed data from its contractors when such data is requested by the EPA pursuant to this Paragraph.
- 10.2 At the request of EPA the NGB shall allow, to the extent practicable, split or duplicate samples to be taken by EPA, or their authorized representatives, of any samples collected by the NGB pursuant to the implementation of this Agreement. Both Parties shall notify the other Party not less than twenty (20) days in advance of any scheduled sampled collection activity, unless otherwise agreed upon by the Parties.
- 10.3 If preliminary analysis indicates a threat or potential threat to the public health, welfare or the environment both Project Managers shall be immediately notified.

XI. PERMITS

- 11.1 The NGB shall be responsible for obtaining all Federal, Commonwealth and local permits which are necessary for the performance of Work under this Agreement and the Comprehensive Plan. Where the permitting authority is the EPA, permits will be issued as expeditiously as is practicable.
- 11.2 The Parties recognize that pursuant to CERCLA § 121(e)(1), 42 U.S.C. § 9621(e)(1), and the NCP, portions of the Remedial Actions called for by this Agreement and conducted entirely on the Site are exempt from the procedural

requirement to obtain Federal, State, or local permits. All activities must, however, comply with all Federal and State standards, requirements, criteria or limitations which would have been included in any such permit as required by CERCLA § 121 and as described in the Comprehensive Plan.

XII. REMOVAL AND EMERGENCY ACTIONS

12.1 Discovery and Notification

If either Party discovers or becomes aware of an emergency or other situation that may present a threat to public health, welfare or the environment at or near the Site which is related to or may affect the Work performed under this Agreement, that Party shall immediately orally notify the other Party and DEP and provide written notice within forty-eight (48) hours of discovery of such emergency. If the emergency arises from activities conducted pursuant to this Agreement, the NGB shall then take immediate action to notify the appropriate federal, Commonwealth and local agencies and all affected members of the public. The NGB shall provide such notice to the EPA and the public in accordance with SARA Section 211(a)(1)(B), 10 U.S.C. §2705(a). The NGB shall give the EPA and DEP adequate opportunity for timely review and comment after the NGB makes any proposal to carry out such Response Action and before the NGB initiates any such Response Action. This opportunity for review and comment shall not apply if the action is in the nature of an emergency removal taken because of a threat to human health, welfare or the environment and it is the determination of the NGB that consultation would be impractical. However the NGB shall notify the EPA and DEP in writing within forty-eight (48) hours of taking any such emergency Removal Action.

12.2 Work Stoppage

In the event a Party determines that activities conducted pursuant to this Agreement will cause or otherwise be threatened by a situation described in Paragraph 12.1, the Party may propose the termination of such activities. If the Parties mutually agree, the activities shall be stopped for such period of time as required to abate the danger. In the absence of mutual agreement, the activities shall be stopped in accordance with the proposal, and the matter shall be immediately referred to the EPA Region I Hazardous Waste Management Division Director for a Work Stoppage determination in accordance with Paragraph 13.9.

12.3 Removal Actions

(a) The provisions of this Section shall apply to all

Removal Actions as defined in CERCLA § 101(23), 42 U.S.C. § 9601(23), including all modifications to, or extensions of, any ongoing Removal Actions, and all new Removal Actions proposed or commenced following the Effective Date of this Agreement;

- (b) Any Removal Actions conducted at the Site shall be conducted in a manner consistent with this Agreement, CERCLA, the NCP, and Executive Order 12580;
- (c) If the EPA determines that there may be a threat to the public health, welfare or the environment because of an actual or threatened release of a Hazardous Substance, the EPA may request the NGB perform a Removal Site Evaluation as required by §300.405(f)(1) and §300.410 of the NCP. This evaluation shall investigate the source and nature of the release, the magnitude of the threat, and shall include an evaluation of factors necessary to make a determination of whether a Removal is necessary;
- (d) If the NGB makes a determination based on the Removal Site Evaluation that there is a threat, the NGB shall take any appropriate Removal Action to abate, prevent, minimize, stabilize, mitigate, or eliminate the release or the threat of release. Factors to be considered in determining whether a Removal Action is necessary include, but are not limited to:
 - (i) actual or potential exposure to nearby human populations, drinking water supplies, or sensitive ecosystems;
 - (ii) high levels of Hazardous Substances, pollutants or contaminants in soils largely at or near the surface, that may migrate; and
 - (iii) weather conditions that may cause Hazardous Substances, pollutants or contaminants to migrate or be released;
- (e) If the NGB determines that a Removal Action is appropriate, such Removal Action shall begin as soon as is practicable. Whenever a planning period of at least six months exists before on-Site activities must be initiated, an Engineering Evaluation/Cost Analysis (EE/CA) shall be conducted. The EE/CA is an analysis of Removal alternatives for a Site. In addition, if sampling is to be performed, sampling and analysis plans

shall be prepared and submitted to EPA for review and comment;

- (f) If the NGB and EPA Project Managers determine that the Removal Action will not fully address the threat posed to public health, welfare or the environment such threat may require Remedial Action, the NGB shall ensure an orderly transition from Removal to Remedial Response activities;
- (g) In the event a Removal Action of explosives, munitions, or ordnance is required to protect public health, welfare or the environment, it shall be performed by the NGB as an emergency Removal Action. Any Removal Action of explosives, munitions, or ordnance shall be performed in accordance with applicable regulations, directives and guidance of the Departments of Defense and Transportation or their component agencies;
- (h) In the event that NGB fails to take a Removal Action necessary to protect public health, welfare, or the environment, the EPA may request that the NGB take such Removal Actions; and
- (i) Nothing in this Agreement waives whatever right EPA has under CERCLA to conduct Removal Actions at the Site, or under any other law to otherwise act to protect public health, welfare and the environment.

12.4 Notice and Opportunity to Comment

- (a) In the case of all Removal Actions, the Party conducting the Removal Action shall designate a spokesperson, who shall inform the community of actions taken, respond to inquiries, and provide information concerning the release. The spokesperson shall notify, at a minimum, immediately affected citizens, and State and local officials;
- (b) For actions where a Party determines that a Removal is appropriate and less than six (6) months exist before on-Site Removal will commence, the Party shall:
 - (i) Publish a notice of availability of the Administrative Record file in a major local newspaper within sixty (60) days of initiation of an on-Site Removal;
 - (ii) Provide a public comment period of not less

than thirty (30) days from the time the Administrative Record is made available; and

- (iii) Prepare a written response to significant comments;
- (c) If a Removal Action will extend beyond one hundred and twenty (120) days from the initiation of on-Site Removal activities, the NGB shall by the end of the one hundred and twenty (120) day period:
 - (i) Conduct interviews with local officials, community residents, and other interested or affected parties to solicit their concerns;
 - (ii) Prepare a formal Community Relations Plan (CRP)/Community Involvement Plan which specifies the activities the NGB expects to undertake during the Removal activity; and
 - (iii) Establish at least one local information repository at or near the location of the Response Action, which should contain items made available for public information as well as the administrative record;
- (d) If a planning period of at least six (6) months exists prior to initiation of on-Site Removal activities, the NGB shall at a minimum:
 - (i) Comply with the requirements of Paragraph 12.4(c)(i), (ii), and (iii) prior to the completion of an EE/CA. In addition, the information repository and Administrative Record file shall be established no later than when the EE/CA approval memorandum is signed;
 - (ii) Publish a notice of availability and brief description of the EE/CA in two (2) major local newspapers;
 - (iii) Provide a reasonable opportunity, not less than thirty (30) calendar days, for submission of written and oral comments; and
 - (iv) Prepare a written response to significant comments;
- (e) All activities related to ongoing Removal Actions shall be reported by the NGB in the progress reports as described in Section VIII, (Project Managers).

- 12.5 Any dispute among the Parties as to whether a non-emergency Response Action proposed under Section XII, (Removal and Emergency Actions), is properly considered a Removal Action, as defined by 42 U.S.C. § 9601(23), or as to the consistency of such a Removal Action with the final Remedial Action, shall be resolved pursuant to Section XIII, (Dispute Resolution). Such dispute may be brought directly to the Dispute Resolution Committee (DRC) or the Senior Executive Committee (SEC) at either Party's request.

XIII. DISPUTE RESOLUTION

- 13.1 Except as specifically set forth elsewhere in this Agreement, if a dispute arises under this Agreement, the procedures of this Section shall apply. All Parties to this Agreement shall make reasonable efforts to informally resolve disputes at the Project Manager or immediate supervisor level. If resolution cannot be achieved informally, the procedures of this Section shall be implemented to resolve a dispute.
- 13.2 Within thirty (30) days after: (1) the issuance of a draft final Primary document pursuant to Section VII, (Consultation with EPA), or (2) any action which generates a dispute, the disputing Party shall submit to the other Party a written statement of dispute setting forth the nature of the dispute, the Work affected by the dispute, the disputing Party's position with respect to the dispute and the technical, legal or factual information the disputing Party is relying upon to support its position.
- 13.3 Prior to any Party's utilization of the Dispute Resolution mechanism described herein, the disputing Party shall engage the other Party in informal Dispute Resolution through the Project Managers and/or their immediate supervisors. During this informal Dispute Resolution period, the Parties shall meet as many times as are necessary to discuss and attempt resolution of the dispute. Any Party may invoke the dispute resolution provisions of this Agreement at any time pursuant to paragraph 13.1 and 13.2 above.
- 13.4 The Dispute Resolution Committee (DRC) is hereby established for the purpose of resolving disputes arising under this Agreement. The DRC will serve as a forum for resolution of disputes for which agreement has not been reached through informal Dispute Resolution. The Parties shall each designate one individual and an alternate to serve on the DRC. The individuals designated to serve on the DRC shall be employed at the policy level (Senior Executive Service (SES) or equivalent) or be delegated the authority to participate on the DRC for the purposes of Dispute Resolution under this Agreement. The EPA representative on

the DRC is the Waste Management Division Director of EPA's Region I (EPA Division Director). The NGB's designated member is Chief of the Environmental Division of the NGB/DEV Ronald Watson. Written notice of any delegation of authority from the Party's designated representative on the DRC shall be provided to all other Parties pursuant to the procedures of Section VII, (Project Managers).

- 13.5 Following the submittal of a dispute to the DRC, the DRC shall have twenty-one (21) days to unanimously resolve the dispute and issue a written decision signed by all Parties. If the DRC is unable to unanimously resolve the dispute within this twenty-one (21) day period, the written statement of dispute shall be forwarded to the Senior Executive Committee (SEC) for resolution within fourteen (14) days after the twenty-one (21) day resolution period.
- 13.6 An SEC is hereby established for the purpose of resolving disputes for which agreement has not been reached by the DRC. The EPA representative on the SEC is the Regional Administrator of EPA's Region I and the NGB representative on the SEC is the deputy Assistant Secretary for the Air Force for Environmental Safety and Occupational Health or his designated representative. The SEC members shall, as appropriate, confer, meet and exert their best efforts to resolve the dispute and issue a unanimous written decision signed by all Parties. EPA's Regional Administrator shall issue a written position within twenty-one (21) days if unanimous resolution of the dispute is not reached. The NGB may, within twenty-one (21) days of the Regional Administrator's issuance of EPA's position, issue a written notice elevating the dispute to the Administrator of U.S. EPA for resolution in accordance with all applicable laws and procedures. In the event that a Party elects not to elevate the dispute to the Administrator within the designated twenty-one (21) day period, the Party shall be deemed to have agreed with the Regional Administrator's written position with respect to the dispute.
- 13.7 Upon submittal of a dispute for resolution to the Administrator of EPA pursuant to Paragraph 13.6 above, the Administrator will review and resolve the dispute within twenty-one (21) days. Upon request, and prior to resolving the dispute, the EPA Administrator shall meet and confer with the NGB Secretariat Representative to discuss the issue(s) under dispute. Upon resolution, the Administrator shall provide the NGB with a written final decision setting forth the resolution of the dispute and a statement of the information upon which the decision is based. The duties of the Administrator set forth in this Section shall not be delegated.

- 13.8 The pendency of any dispute under this Section shall not affect the NGB responsibility for timely performance of the Work required by this Agreement, except that the time period for completion of Work affected by such dispute shall be extended for a period of time usually not to exceed the actual time taken to resolve any good faith dispute in accordance with the procedures specified herein. All elements of the Work required by this Agreement, which are not affected by the dispute, shall continue to be completed in accordance with the applicable Schedule.
- 13.9 When Dispute Resolution is in progress, Work affected by the dispute will immediately be discontinued if the EPA Region I Waste Management Division Director requests, in writing, that Work related to the dispute be stopped because, in EPA's opinion, such Work is inadequate or defective, and such inadequacy or defect is likely to yield an adverse effect on public health, welfare or the environment, or is likely to have a substantial adverse effect on the remedy selection or implementation process. To the extent possible, the Party seeking a Work stoppage shall consult with the other Party prior to initiating a Work stoppage request. After stoppage of Work, if a Party believes the Work stoppage is inappropriate or may have potential significant adverse impacts, the Party may meet with the other Party to discuss the Work stoppage. Following this meeting, and further consideration of the issues, the EPA Division Director will issue, in writing, a final decision with respect to the Work stoppage. The final written decision of the EPA Division Director may immediately be subjected to formal Dispute Resolution. Such dispute may be brought directly to either the DRC or the SEC, at the discretion of the Party requesting Dispute Resolution.
- 13.10 Within twenty-one (21) days of resolution of a dispute pursuant to the procedures specified in Section XIII, the NGB shall incorporate the resolution and final determination into the appropriate plan, Timetable or procedures and proceed to implement this Agreement according to the amended plan, Timetable or procedures.
- 13.11 A resolution of a dispute pursuant to this Section of the Agreement constitutes a final resolution to any dispute arising under this Agreement. The parties shall abide by all terms and conditions of any final resolution of dispute obtained pursuant to this Section of this Agreement.

XIV. DEADLINES AND SCHEDULES

- 14.1 The Parties agree to Timetable 1 set forth in Appendix III, (Deadlines and Schedules) for submittal of Proposed Plans

that address the Areas of Contamination identified as of the signing of this Agreement.

- 14.2 The Parties agree to annually negotiate Timetable 2 in Appendix III for those Primary and Secondary Documents due during each succeeding two years. The year to be used for the purposes of this negotiation will be the fiscal year used by the United States government that commences on October 1 and ends September 30th of the following calendar year.

No later than January 10, 1992 and of each year thereafter, the NGB shall propose a Timetable for the completion of each draft Primary and Secondary Document for the succeeding two years. No later than February 10, 1992 and each year thereafter, the EPA will provide the NGB with its comments on the proposed Timetable 2. EPA and NGB shall meet or confer as necessary to resolve outstanding disputes concerning the proposed Timetable 2 until March 10, 1992 and each year thereafter. If agreement on the proposed Timetable has not been reached by April 10, 1992 and each year thereafter, then by April 31, 1992 and each year thereafter, all outstanding disputes on the proposed Timetable shall be submitted to the Dispute Resolution Committee established by Paragraphs 13.4 above, for resolution as set forth in Section XIII, (Dispute Resolution). The Timetables for Timetable 2 negotiated under this Paragraph shall establish enforceable Timetables for the first year of the two year cycle. The Timetables established for the second year shall be used for planning purposes only and shall not be enforceable under this Agreement. The first such Timetable required by this Agreement is included in Appendix III. Documents to be listed in Timetable 2 shall include at a minimum:

- (i) Decision Documents;
- (ii) RI/FS Work Plans (including QAPP, Health and Safety Plan, and any supplemental Scope of Work);
- (iii) Remedial Investigations (including Risk Assessment);
- (iv) Feasibility Studies;
- (v) Proposed Plans; and
- (vi) Draft Final Record of Decision(s) (ROD).

- 14.3 Upon issuance of each ROD, the NGB shall prepare a Schedule that conforms to the requirements of CERCLA §120 (e) (2) and the NCP for the completion of the following Primary and

Secondary Documents:

- (i) Remedial Design Scope of Work (Secondary)
- (ii) 60% Design Presentation (Secondary)
- (iii) Final Design (including Remedial Action Work Plan, Construction Quality Assurance Project Plan and Construction Quality Control Plan) (Primary)
- (iv) Project Closeout Report (Primary)

14.4 The NGB shall submit the draft RI/FS Report for each AOC or OU within six hundred and sixty (660) days after the final RI/FS Work Plan for such AOC or OU becomes effective.

14.5 For any additional Study Area, AOC or OU identified after the Effective Date of this Agreement, the NGB shall propose Timetables for all documents listed in Paragraphs 14.2 and 14.3, which conform to the requirements of CERCLA § 120, within twenty-one (21) days after the receipt of approval of any SI report which identifies an AOC or OU not found in Paragraph 5.24 or 5.25 of this Agreement. Within fifteen (15) days of receipt, EPA shall review and provide comments to the NGB regarding such proposed Timetables. Within fifteen (15) days following receipt of comments, the NGB shall, as appropriate, make revisions and reissue the proposal. The Parties shall meet as necessary to discuss and finalize the proposed Timetables. If the Parties agree on proposed Timetables, the finalized Timetables shall be incorporated into the Work Plans listed in Paragraph 14.2 above. If the Parties fail to agree within thirty (30) days on the proposed Timetables, the matter shall immediately be submitted for Dispute Resolution pursuant to Section XIII, (Dispute Resolution), of this Agreement. The final Timetables established pursuant to this Paragraph shall be published by EPA and shall become an Appendix to this Agreement enforceable hereunder. The proposed Timetables shall be consistent with the Timetables set forth in CERCLA § 120, Paragraph 14.4 above and Timetables established pursuant to Paragraph 14.2 above.

14.6 The Parties agree to the milestones established in Timetable 3 of Appendix III - FFA Milestone Summary (Plume Response Enforceable Schedule Summary). Timetable 3 includes enforceable milestones for activities which extend beyond the current fiscal year through system start-up for each plume. The Parties agree that the system start-up dates contained in Timetable 3 represent the latest dates by which system start-up will be achieved. After the decision point milestone has been reached for each plume, a Full Scale Implementation Plan shall be submitted within 60 days of

such decision point which contains a more detailed schedule for implementation of the selected remedy. Once the Parties have agreed to the milestones included in the Full Scale Implementation Plan, any such milestones which are enforceable shall be incorporated into Timetable 3. The Parties agree that extensions to milestones preceding the system start-up date which are granted by EPA may be grounds for extension of the corresponding system start-up milestone, but shall not automatically be grounds for any such extension. The public shall be regularly advised of all extensions to enforceable milestones under ~~Timetable~~ 3.

- 14.7 The Timetables set forth in this Section, or to be established as set forth in this Section after the Effective Date of this Agreement, may be extended pursuant to Section XV, (Extensions), of this Agreement.

XV. EXTENSIONS

- 15.1 A Timetable, Deadline or Schedule may be extended by EPA upon receipt of a timely request for Extension of a Timetable, Deadline or Schedule and when good cause for the requested Extension exists. A request for Extension by the NGB shall be submitted to the EPA in writing and shall specify:

- (a) The Timetables, Deadlines or Schedules that are sought to be extended;
- (b) The length of the Extension sought;
- (c) The good cause(s) for which the Extension is sought; and
- (d) The extent to which any related Timetables, Deadlines or Schedules would be affected if the Extension were granted.

- 15.2 Good cause exists for an Extension when sought in regard to:

- (a) An event of Force Majeure, (Section XVI);
- (b) A delay caused by another Party's failure to meet any requirement of this Agreement;
- (c) A delay caused by the good faith invocation of Dispute Resolution or the initiation of judicial action;
- (d) A delay caused, or which is likely to be caused, by the grant of an Extension in regard to other Timetables, Deadlines or Schedules pursuant to

this Agreement;

- (e) A delay caused by the delay of a sampling event in accordance with Paragraph 9.4;
- (f) Any other event or series of events mutually agreed to by the Parties as constituting good cause; and
- (g) Any Work stoppage within the scope of Section XIII, Removals and Emergency Actions.

15.3 Denial of a request for Extension is subject to the Dispute Resolution procedures of Section XIII hereof.

15.4 Within fifteen (15) days of receipt of a request for an Extension of Timetables, Deadlines or Schedules, EPA shall advise the NGB in writing of their respective positions on the request. Any failure by EPA to respond within the fifteen (15) day period shall be deemed to constitute concurrence in the request for Extension.

15.5 If there is agreement between the Parties that the requested Extension is warranted, the NGB shall extend the affected Timetables, Deadlines or Schedules accordingly or to a mutually agreed upon alternative. If there is no consensus between the Parties as to whether all or part of the requested Extension is warranted, the Timetables, Deadlines or Schedules shall not be extended except in accordance with the determination resulting from the Dispute Resolution process.

15.6 The requesting party must invoke Dispute Resolution within fourteen (14) days of receipt of a statement of nonconcurrence with the requested Extension or the right to invoke Dispute Resolution is waived.

15.7 A timely and good faith request by the NGB for an extension shall toll any assessment of stipulated penalties or application for judicial enforcement of the affected Timetable, Deadline or Schedule until a decision is reached on whether the requested extension is denied. If the extension is denied, stipulated penalties may be assessed and may accrue from the date of the original Timetable, Deadline or Schedule. Following the grant of an Extension, an assessment of stipulated penalties or an application for judicial enforcement may be sought only to compel compliance with the Timetable, Deadline or Schedule as most recently extended.

XVI. FORCE MAJEURE

- 16.1 A Force Majeure shall mean any event arising from causes beyond the control of the Party that causes a delay in or prevents the performance of any obligation under this Agreement, including but not limited to, acts of God; fire; war; unanticipated breakage or accident to machinery, equipment or lines of pipe despite reasonably diligent maintenance; insurrection; civil disturbance; explosion; adverse weather conditions that could not be reasonably anticipated; after exercise of all best efforts, any necessary authorizations, approvals, permits or licenses due to action or inaction of any non-DOD governmental agency or authority other than the NGB; delays caused by compliance with applicable statutes or regulations governing contracting, procurement or acquisition procedures, despite the exercise of reasonable diligence; insufficient availability of appropriated funds which have been diligently sought and for which a timely request has been made as part of the budgetary process as set forth in Section XXV (Funding); and restraint by court order or order of a public authority. A Force Majeure shall also include any strike or other labor dispute, whether or not within the control of the Parties affected thereby. Force Majeure shall not include increased costs or expenses of Response Actions, whether or not anticipated at the time such Response Actions were initiated; or non-attainment of the Cleanup or Performance Standards set forth pursuant to Section VI, (Work To Be Performed), or the Comprehensive Plan, of this Agreement.
- 16.2 When circumstances occur which may delay or prevent the completion of any obligation of the Agreement, whether or not caused by a Force Majeure event, NGB shall notify the EPA Project Manager orally of the circumstances within forty-eight (48) hours after the NGB becomes aware of such circumstances.

If the EPA Project Manager is unavailable, the NGB shall notify the Director of the Waste Management Division, EPA Region I. Within fifteen (15) working days after the NGB first becomes aware of such circumstances, NGB shall supply to EPA in writing an explanation of the cause(s) of any actual or expected delay, the anticipated duration of any delay, the measures taken and to be taken by the NGB to prevent or minimize the delay, and the Timetable for implementation of such measures. The NGB shall exercise best efforts to avoid or minimize any delay and any effects of a delay. Failure to give timely oral and written notice to the EPA in accordance with this Section shall not constitute a waiver of any claim of Force Majeure with respect to the circumstances in question.

XVII. RECORDS OF DECISION AND PLANS FOR REMEDIAL ACTION

- 17.1 This Section shall apply to selection of Remedial Actions and any disputes relating thereto.
- 17.2 As appropriate, for each AOC or OU the NGB shall submit the final draft RI/FS and Proposed Plan to EPA for review within the Timetables detailed in Section XIV, (Deadlines and Schedules) or Appendix III of this Agreement. These documents shall contain a statement of the preferred Remedial alternative(s). EPA's comments shall be addressed by the NGB when preparing the final RI/FS report and drafting the Proposed Plan. The RI/FS shall be made available to the public and the Proposed Plan shall be distributed to the public. The NGB will hold a public information meeting to discuss the preferred alternative for each AOC or OU. A public comment period will be announced, and a public hearing will be held by the NGB to receive comments on the RI/FS and Proposed Plan for each AOC or OU. Copies of all written and oral public comments received shall be provided to the Parties. Following public comment the NGB, in consultation with EPA if appropriate, will modify the FS or Proposed Plan based on the comments received. Subject to Section VII (Consultation with EPA), modifications will be made by the NGB and the modified documents will be reviewed by EPA. Either of the Parties may require additional public comments be solicited if modifications to the Proposed Plan substantially change the proposed remedy.
- 17.3 Based on the RI/FS, Proposed Plan and comments received from EPA and the public, the NGB shall draft and submit to EPA a draft ROD for each AOC or OU in accordance with the Timetable established pursuant to Section XIV, (Deadlines and Schedules) and Appendix III of this Agreement. The draft ROD will include a Responsiveness Summary, in accordance with applicable EPA guidance. The Parties shall have thirty (30) days to attempt to jointly select a remedy following the NGB submission of a draft final ROD. If the Parties are unable to reach agreement on the draft final ROD, selection of a Remedial Action shall not be subject to Dispute Resolution. The selection of a Remedial Action shall be made by the EPA Administrator and EPA shall then prepare a final ROD.
- 17.4 Upon issuance of a ROD for the selected Remedial Action(s) the RI/FS will be deemed completed.
- 17.5 The selection of Remedial Action(s) by the EPA Administrator shall be final and not subject to dispute by the NGB.
- 17.6 Upon issuance of each ROD the NGB shall submit all Work Plans, other plans or documents described in the Agreement

and Comprehensive Plan, and perform all Remedial Design/Remedial Action (RD/RA) Requirements in conformance with the Schedules and Timetables established under this Agreement.

- 17.7 Once the ROD is approved by EPA, the NGB shall implement the Remedial Action(s) in accordance with the requirements of the Schedules established by this Agreement.
- 17.8 The Final Design is a Primary document subject to the review and comment process in Section VII, (Consultation With EPA). The Final Design shall at a minimum contain: (a) a project Schedule for construction and implementation of the Remedial Action, (b) an Operation and Maintenance plan which shall cover both implementation and long-term maintenance of the Remedial Action, (c) a construction quality assurance plan which shall ensure that a completed Remedial Action meets or exceeds all design criteria, plans and specifications, (d) a sampling and analysis plan, (e) a waste management plan, and (f) a contingency plan for a response to systems malfunctions. The NGB shall implement the Final Design upon approval by EPA in accordance with the requirements and Schedules set forth in CERCLA, CERCLA guidance and policy, and the Timetables and Schedules set forth in Section XIV, (Deadlines and Schedules), and Appendix III of this Agreement.
- 17.9 Upon approval by EPA all terms, conditions, Timetables, Deadlines, Schedules, proposed Work, and ROD relating to any AOC's (or group of AOC's, if applicable) or OU required by this Section shall be incorporated into this Agreement and become an enforceable part hereof.

XVIII. EXEMPTIONS

- 18.1 The obligation of the NGB to comply with the provisions of this Agreement may be relieved by a Presidential order or exemption issued pursuant to the provisions of CERCLA § 120(j)(1), 42 U.S.C. § 9620(j)(1), or RCRA Section § 6001, 42 U.S.C. § 6961, or the order of an appropriate court.

XIX. EPA CERTIFICATION

- 19.1 When the NGB determines that all Remedial Actions at the Site have been completed in accordance with the requirements of this Agreement, it shall so advise EPA in writing, and shall request from EPA certification that the Remedial Actions have been completed in accordance with the requirements of this Agreement. The NGB shall schedule and conduct a pre-certification inspection to be attended by the NGB and EPA. Such inspection shall be followed within

thirty (30) days by a written report signed by the NGB's signatory authority or his designee and by a registered professional engineer certifying that all Remedial Actions have been completed in full satisfaction of the pertinent requirements of this Agreement. Within ninety (90) days of the receipt of the Closeout Report, EPA shall advise in writing that:

- (a) EPA shall certify that all Remedial Actions have been completed in accordance with this Agreement based on conditions known at the time of certification and limited by Section XXIII (Other Claims); or
- (b) EPA denies the NGB request for certification, stating in full the basis of the denial.

19.2 If EPA denies the NGB request for certification that all Remedial Actions have been completed in accordance with this Agreement, the NGB may invoke Dispute Resolution to review EPA's determination. If EPA's denial of certification is upheld in Dispute Resolution, EPA shall describe the Additional Work needed to bring the Remedial Action into compliance with the requirements of this Agreement. After performing such Additional Work, the NGB shall resubmit a request for certification to EPA.

19.3 In the event that EPA determines that Additional Work, including Additional Work identified in Paragraph 19.2 and during the CERCLA § 121(c) review process, is necessary to meet the Performance and Cleanup Standards described in any ROD, or is necessary to protect public health, welfare or the environment, the NGB shall complete such Work in accordance with the standards, specifications, and Schedules approved or established by EPA. Unless otherwise stated by EPA, within one hundred eighty (180) days of EPA's receipt of notice that Additional Work is necessary, or otherwise agreed to by the Parties, the NGB shall submit for EPA's approval a Work Plan for the Additional Work. The one hundred eighty (180) day deadline shall be counted as one hundred twenty (120) days for the contracting of Additional Work and Sixty days (60) for work and submittal of the Work Plan. If such contracting time is reduced, the NGB agrees to adjust the 120 day contracting timeframe accordingly. The plan shall conform to the requirements of this Agreement, the National Contingency Plan, Superfund Remedial Design and Remedial Action Guidance and any additional guidance documents provided by EPA. Upon approval pursuant to the procedures set forth in Section VII, the NGB shall implement the plan for Additional Work in accordance with the Schedule contained therein.

XX. ENFORCEABILITY

- 20.1 Upon the Effective Date of this Agreement, any standard, regulation, condition, requirement or order which has become effective under CERCLA and is incorporated into this Agreement is enforceable by any person pursuant to CERCLA § 310, and any violation of such standard, regulation, condition, requirement or order will be subject to civil penalties under CERCLA §§ 310(c) and 109. Upon its Effective Date, the terms of this Agreement arising under CERCLA § 120 are enforceable by any person pursuant to CERCLA § 310; 42 U.S.C. § 9631 and the terms of this Agreement arising under RCRA § 7003 are enforceable by any person pursuant to RCRA § 7002, 42 U.S.C. § 6972.
- 20.2 All Timetables, Deadlines, terms and conditions associated with any SI, Study Area or RI/FS shall be enforceable by any person pursuant to CERCLA § 310 and/or RCRA § 7002, as appropriate, and any violation of such Timetable and Deadlines will be subject to civil penalties under CERCLA §§ 310(c) and 109.
- 20.3 All terms, conditions, and Schedules of this Agreement which relate to Study Areas, Areas of Contamination, Operable Units or final Remedial Actions, including corresponding Timetables, Deadlines or Schedules, and all Work associated with the Areas of Contamination, Operable Units or final Remedial Actions, shall be enforceable by any person pursuant to CERCLA § 310(c) and/or RCRA § 7002, as appropriate, and any violation of such terms or conditions will be subject to civil penalties under CERCLA §§ 310(c) and 109.
- 20.4 Any final resolution of a dispute pursuant to Section XIII, (Dispute Resolution), of this Agreement which establishes a term, condition, requirement, order, Timetable, Deadline or Schedule shall be enforceable by any person pursuant to CERCLA § 310(c) and/or RCRA § 7002, as appropriate, and any violation of such term, condition, Timetable, Deadline or Schedule will be subject to civil penalties under CERCLA §§ 310(c) and 109.
- 20.5 Nothing in this Agreement shall be construed as authorizing any person to seek judicial review of any Remedial Action or Work where review is barred by any provision of CERCLA, including CERCLA § 113(h).
- 20.6 Nothing in this Agreement shall be construed as a restriction or waiver of any rights EPA may have under CERCLA, including but not limited to any rights under CERCLA §§ 113 and 310, 42 U.S.C. §§ 9613 and 9659. The NGB does not waive any rights it may have under CERCLA § 120, **SARA § 211** and Executive Order 12580.

- 20.7 The Parties agree to exhaust their rights under Section XIII, (Dispute Resolution), prior to exercising any rights to judicial review that they may have. The dispute resolution process shall be deemed exhausted at the end of the time period permitted for completion of dispute resolution in Section XIII, (Dispute Resolution).
- 20.8 The Parties agree that all Parties shall have the right to enforce the terms of this Agreement.

XXI. STIPULATED PENALTIES

- 21.1 In the event that the NGB fails to submit a Primary document set forth in this Agreement to EPA pursuant to the appropriate Schedules, Timetable or Deadlines in accordance with the requirements of this Agreement, or fails to comply with a term or condition of this Agreement, which relates to an AOC, Operable Unit, or final Remedial Action, EPA may assess a stipulated penalty against the NGB. The NGB agrees that to the extent funds are appropriated for such penalties it shall pay all assessed stipulated penalties not rescinded through Dispute Resolution. A stipulated penalty may be assessed for violations which are described in this Paragraph. Penalties shall be in an amount not to exceed \$5,000 for the first week (days 1 through 7) (or part thereof), and \$10,000 for each additional week (or part thereof).
- 21.2 Upon determining that the NGB has violated the Agreement as described in Paragraph 21.1, EPA shall so notify the NGB in writing. If the violation in question is not already subject to Dispute Resolution at the time such notice is received, the NGB shall have fifteen (15) days after receipt of the notice to invoke Dispute Resolution on the question of whether the violation did in fact occur. The NGB shall not be liable for the stipulated penalty assessed by the EPA if the violation is determined, through the Dispute Resolution process, not to have occurred. No assessment of a stipulated penalty shall be final until the conclusion of Dispute Resolution procedures related to the assessment of the stipulated penalty.
- 21.3 The annual reports required by CERCLA § 120(e)(5), 42 U.S.C. § 9620(e)(5), shall include, with respect to each final assessment of a stipulated penalty against the NGB under this Agreement, each of the following:
- (a) The facility responsible for the failure;
 - (b) A statement of the facts and circumstances giving rise to the failure;

- (c) A statement of any administrative or other corrective action taken at the Facility, or a statement of why such measures were determined to be inappropriate;
- (d) A statement of any additional action taken by or taken at the facility to prevent recurrence of the same type of failure; and
- (e) The total dollar amount of the stipulated penalty assessed for the particular failure.

- 21.4 Stipulated penalties assessed pursuant to this Section shall be payable to the Hazardous Substance Superfund only in the manner and to the extent expressly provided for in Acts authorizing funds for, and appropriations to the DOD.
- 21.5 In no event shall this Section give rise to a stipulated penalty in excess of the amount set forth in CERCLA § 109, 42 U.S.C. § 9609.
- 21.6 This Section shall not affect the NGB ability to obtain an Extension of a Timetable, Deadline or Schedule pursuant to Section XV, (Extensions), of this Agreement.
- 21.7 Nothing in this Agreement shall be construed to render any officer or employee of the NGB personally liable for the payment of any stipulated penalty assessed pursuant to this Section.

XXII. OTHER CLAIMS

- 22.1 Nothing in this Agreement shall constitute or be construed as a release or discharge from any claim, cause of action or demand in law or equity against any person, firm, partnership, agent or corporation for any liability it may have arising out of or relating to the generation, storage, treatment, ~~handling~~, transportation, release, or disposal of any Hazardous Substances, hazardous wastes, pollutants or contaminants found at, taken to, taken from, or emanating from the Site, or based upon ownership or operation of the Site. EPA shall not be held as a party to any contract entered into by the NGB to implement the requirements of this Agreement.
- 22.2 This Agreement does not constitute any decision or pre-authorization by EPA of funds under CERCLA § 111(a)(2), 42 U.S.C. § 9611(a) for any person, agent, contractor or consultant acting for the NGB.

22.3 This Agreement does not affect any claim for:

- (a) natural resources damage assessments, or for damage to natural resources;
- (b) claims based on a failure or refusal by the NGB to meet a requirement of the Agreement;
- (c) liability for the disposal of any Hazardous Substances or waste material taken from the Site.

XXIII. PRESERVATION OF RECORDS

23.1 Despite any document retention policy to the contrary, the Parties shall preserve, during the pendency of this Agreement and for a minimum of ten (10) years after its termination, all records and documents contained in the Administrative Record and any additional records and documents retained in the ordinary course of business which relate to the actions carried out pursuant to this Agreement. After this ten (10) year period, each Party shall notify the other Parties at least forty-five (45) days prior to destruction of any such documents. Upon request by any Party, the requested Party shall make available such records or copies of any such records, unless withholding is authorized and determined appropriate by the Freedom of Information Act 5 U.S.C. 552 and the Privacy Act 5 U.S.C. 552.

XXIV. TERMINATION AND SATISFACTION

24.1 Following EPA certification of the Remedial Actions at the Site pursuant to Paragraphs 19.1 and 19.2 of Section XIX, (EPA Certification), the NGB may propose in writing the termination of this Agreement upon showing that the objectives of this Agreement have been satisfied. The obligations of this Agreement shall be deemed satisfied and terminated upon receipt by the NGB of written notice from EPA that the NGB has demonstrated that all the terms of this Agreement have been completed. If EPA denies or otherwise fails to grant a termination notice within 90 days of receiving a written NGB request for such notice, EPA shall provide a written statement of the basis for its denial and a description of the Work required by the NGB to obtain a letter of termination and satisfaction. A denial under this section may be subject to Dispute Resolution.

24.2 Upon termination of this Agreement the party which proposed termination shall place a public notice announcing termination in two (2) major local newspapers of general circulation and in the Federal Register.

24.3 This provision shall not affect NGB obligations pursuant to Section XXXII (Five Year Review) under this Agreement

including Dispute Resolution, nor shall it affect NGB obligations to complete Work under this Agreement pursuant to Section VI, Work to be Performed, or the Comprehensive Plan.

XXV. FUNDING

- 25.1 The Parties to this Agreement expect that all obligations of the NGB arising under this Agreement will be fully funded. The NGB agrees to seek sufficient funding through the Department of the Air Force, Department of the Army, Department of Defense (DOD) budgetary process, to fulfill their obligations under this Agreement.
- 25.2 In accordance with CERCLA § 120(e)(5)(B), 42 U.S.C. § 9620(e)(5)(B), the Air Force and the Army shall include in their annual submission to DOD, the specific cost estimates and budgetary proposals associated with the implementation of this Agreement.
- 25.3 Any requirement for the payment or obligation of funds, including stipulated penalties, by the NGB established by the terms of this Agreement shall be subject to the availability of appropriated funds, and no provision herein shall be interpreted to require obligation or payment of funds in violation of the Anti-Deficiency Act, 31 U.S.C. § 1341. In cases where payment or obligation of funds would constitute a violation of the Anti-Deficiency Act, the dates established requiring the payment or obligation of such funds shall be appropriately adjusted.
- 25.4 If appropriated funds are not available to fulfill the NGB obligations under this Agreement, EPA reserves the right to initiate an action against any other person, or to take any Response Action, which would be appropriate absent this Agreement.
- 25.5 For the NGB, funds authorized and appropriated annually by Congress under the appropriation in the "Environmental Restoration, Defense" appropriation in the Department of Defense Appropriation Act and allocated by the Deputy Assistant Secretaries of the Air Force and Army (Environment) will be the source of funds for activities required by this Agreement for the NGB consistent with SARA § 211, 10 U.S.C. § 2701 et seq. In the event that the "Environmental Restoration, Defense" appropriation is not available in any year for a Remedial Response at the Site the NGB, in coordination with the Departments of the Air Force and the Army, shall follow the standardized DOD-EPA developed prioritization process to allocate that year's appropriations in a manner which maximizes the protection of public health, welfare or the environment.
- 25.6 While not a Party to this Agreement, the USCG has agreed to jointly fund portions of the work pursuant to a separate

agreement entitled the "United States Coast Guard and United States National Guard Bureau Memorandum of Agreement for the Massachusetts Military Reservation, Cape Cod, Massachusetts," which became effective on February 6, 1995.

XXVI. COMMUNITY RELATIONS

- 26.1 The Community Relations Plan (CRP)/Community Involvement Plan developed by the EPA, NGB and the Commonwealth of Massachusetts and attached as Appendix IV of this Agreement shall be incorporated as part of this Agreement and be enforceable hereunder. The Community Relations Plan/Community Involvement Plan shall control all community relations activities at the Site.

XXVII. PUBLIC COMMENT ON THIS AGREEMENT

- 27.1 Within 15 days after the date upon which the last Party executes this Agreement, the NGB shall announce the availability of this Agreement to the public for a thirty (30) day period for review and comment, including publication in at least two (2) major local newspapers of general circulation. The procedures of 40 C.F.R. Part 124.10(c) and Part 124.10(d) shall apply. Comments received shall be transmitted within fourteen days (14) of the close of the comment period to the other Party after the end of the comment period. The Parties shall review such comments and shall determine within thirty (30) days of receipt whether or not modifications to the Agreement should be made.
- 27.2 If the Parties agree that based on public comment modifications to the Agreement are needed, they shall make such modifications by mutual consent within thirty (30) days after the expiration of the public comment period. EPA, in consultation with the NGB, shall determine whether the modifications to the Agreement require additional public notice and comment pursuant to any provision of CERCLA. If EPA determines that no additional notice and comment are required, EPA shall transmit a copy of the modified sections of the Agreement to the NGB and shall notify the NGB in writing that such modifications are effective as of the date of the notification. If the Parties amend the Agreement within the thirty (30) day period and if EPA concludes that such modifications require that the public receive additional opportunity for notice and comment, such additional notice and comment shall be provided consistent with the provisions stated in Paragraph 27.1 above. If the Parties agree, after such additional notice and comment has been provided, that the Agreement does not require any further modification, EPA shall send a copy of the Agreement, as modified, to the NGB and shall notify the NGB that the modifications to the Agreement are effective as of the date of the notification.

27.3 If, thirty (30) days after the expiration of the thirty (30) day comment period, the Parties have not reached an agreement on:

- (a) whether modifications to the Agreement are needed;
- (b) what modifications to the Agreement are required;
- (c) any language, provisions, Timetables, Work to be performed or context of the Agreement or any attachments to the Agreement; or
- (d) whether additional public notice and comments are required;

then the matters which are in dispute shall be resolved by the Dispute Resolution procedures of Section XIII, (Dispute Resolution). For the purpose of this Section, only the specific Paragraph(s) of the Agreement in dispute shall not be in effect while the Dispute Resolution proceedings are underway.

XXVIII. AMENDMENT OR MODIFICATION OF AGREEMENT

28.1 Except as provided in Section VIII, (Project Managers), Paragraph 8.4 (regarding minor field modifications) this Agreement can be amended or modified solely upon written consent of the Parties. Such amendments or modifications shall become effective on the third business day following the date on which the last Party to sign the amendments or modifications sends its notification of signing to the other Parties. Notice under this Section shall be provided pursuant to Section VII, (Consultation with the EPA). The Parties may agree to a different Effective Date.

28.2 The Party initiating the amendment of this Agreement shall propose in writing the amendment for distribution and signature of the other Party.

28.3 A notice of all amendments or modifications to this Agreement relating to a Remedial Action which the parties mutually agree will not significantly effect authority or obligations established under this Agreement shall be published in two (2) major local newspapers of general circulation. Any amendments or modifications to this Agreement which the parties mutually agree will significantly effect authority or obligations established under this agreement, shall be published in two (2) major local newspapers of general circulation and the public shall be given an opportunity to comment in a manner consistent with Section XXVII, (Public Comment on this Agreement), of this Agreement. In the event the parties cannot mutually agree, the amendments or modifications shall be published in two (2) major local newspapers of general circulation and the public shall be given an opportunity to comment in a

manner consistent with Section XXVII of this Agreement.

- 28.4 The Parties hereby agree that for purposes of the amendment to incorporate RCRA § 7003 jurisdiction into this Agreement, the public participation requirements of Section 28.3, above, shall be satisfied by (i) preparation by USAF (with review and comment by EPA and the State) of a fact sheet summarizing the modifications embodied in the amendment and (ii) publication of such fact sheet by the USAF in two (2) major local newspapers of general circulation.

XXIX. EFFECTIVE DATE; WAIVER OF OPPORTUNITY TO CONFER

- 29.1 This Agreement shall become effective upon execution by all Parties and in accordance with Section XXVII, (Public Comment On this Agreement).
- 29.2 Any Response Action in progress on the Site on the Effective Date of this Agreement shall be subject to the obligations and procedures of this Agreement.
- 29.3 By entering into this Agreement, the NGB expressly waives any rights it may have under RCRA § 6001(b)(2), 42 U.S.C. § 6961(b)(2), to request an opportunity to confer with the Administrator of the U.S. Environmental Protection Agency.

XXX. NOTICES AND SUBMISSIONS

- 30.1 Whenever, under the terms of this Agreement, written notice is required to be given or a report or other document is required to be sent by one party to another or by NGB to DEP, it shall be directed to the Parties' Project Managers or to DEP at the addresses specified below, unless those individuals or their successors give written notice of a change to the other Parties. Written notice as specified herein shall constitute complete satisfaction of any written notice requirement of the Agreement with respect to the EPA and the NGB.

For the EPA:

Paul Marchessault
U.S. Environmental Protection Agency
Region I
1 Congress Street, Suite 1100 (HBT)
Boston, Massachusetts 02114-2023

For the NGB:

Jim F. Snyder
AFCEE/MMR
322 East Inner Road, Box 41
Otis ANG Base, MA 02542-5028

For the DEP:

Len Pinaud

Massachusetts Department of Environmental Protection

Southeast Region

20 Riverside Drive

Lakeville, MA 02347

XXXI. QUARTERLY PROGRESS REPORTS

31.1 The NGB shall provide quarterly written progress reports to EPA unless otherwise agreed to by the Parties. At a minimum these progress reports shall:

- (a) Include all results of sampling (including screening data when requested by EPA as described in Section X of this Agreement) tests, and all other data (or summary thereof) received or generated and verified by the NGB during the reporting period;
- (b) Include all activities completed pursuant to this Agreement during the past quarter as well as such actions and plans which are scheduled for the next quarter; and
- (c) Describe any delays, the reasons for such delays, anticipated delays, concerns over possible Schedule implementation or problems that arise in the execution of the Work Plan during the quarter and any steps that were taken to alleviate the delays or problems.

31.2 Each previous quarter's report shall be submitted to EPA by the 20th day of each month following the last day of each quarter (i.e, January 20, April 20, July 20, October 20, etc.).

XXXII. FIVE YEAR REVIEW

32.1 Consistent with 42 U.S.C. § 9621(c) and in accordance with this Agreement, if a selected Remedial Action results in any Hazardous Substance, pollutants or contaminants remaining at an AOC, the Parties shall review each such Remedial Action at least every five (5) years after the initiation of the selected final Remedial Action at each AOC or OU to assure that public health, welfare or the environment are being protected by the Remedial Action to be implemented.

32.2 If, upon such review, it is the conclusion of the Parties that Additional Work for any Remedial Action is appropriate at an AOC in accordance with 42 U.S.C. §§ 9604 or 9606, the NGB shall submit a schedule to EPA for the implementation of such Additional Work pursuant to Paragraph 19.3 herein.

- 32.3 Any dispute by the Parties regarding the need for or the scope of Additional Work to a Remedial Action shall be resolved under Section XIII, (Dispute Resolution), of this Agreement and enforceable hereunder.
- 32.4 Any Additional Work agreed upon pursuant to this Section shall be made a part of this Agreement.
- 32.5 The EPA reserves the right to exercise any available authority to seek the performance of Additional Work pursuant to any applicable state or Federal law.

XXXIII. RESERVATION OF RIGHTS FOR RECOVERY OF EXPENSES

- 33.1 The Parties agree to amend this Agreement at a later date in accordance with any subsequent national resolution of the issue of EPA cost reimbursement. Pending such resolution, EPA reserves any rights it may have with respect to cost reimbursement.

XXXIV. QUALITY ASSURANCE

- 34.1 In order to provide Quality Assurance and maintain Quality Control regarding all field Work and sample collection performed pursuant to this Agreement, the NGB agrees to follow all EPA rules, regulations, guidance and criteria in regards to Quality Assurance and Quality Control (QA/QC) and to designate a Quality Assurance Officer (QAO) who will ensure that all Work is performed in accordance with EPA approved Work Plans, sampling plans and QAPPs. The QAO may either be an employee of the NGB or employed by a contractor of the NGB, at the NGB's discretion. The QAO shall maintain for inspection a log of Quality Assurance field activities and provide a copy to the Parties upon request.
- 34.2 To ensure compliance with the QAPP, the NGB, upon request by EPA, shall arrange for access to all laboratories performing analysis on behalf of the NGB pursuant to this Agreement.

XXXV. RELEASE OF RECORDS

- 35.1 The Parties may request of one another access to or a copy of any record or document relating to this Agreement. If the Party that is the subject of the request (the originating Party) has the record or document, that Party shall provide access to or a copy of the record or document, provided, however, that no access to or copies of records or documents need be provided if the record or document is subject to claims of attorney-client privilege, attorney work product, deliberative process, enforcement confidentiality, or properly classified for national security under law or executive order.

- 35.2 Records or documents identified by the originating Party as confidential pursuant to other non-disclosure provisions of the Freedom of Information Act, 5 U.S.C. § 552 or pursuant to CERCLA § 104 (e) (7), U.S.C. § 9604 (e) (7), shall be released to the requesting Party, provided the requesting Party states in writing that the document is necessary to carry out a function relating to this Agreement and that a requesting party will not release the record or document to the public without prior approval of the originating Party. Records or documents which are provided to the requesting Party and which are not identified as confidential may be made available to the public without further notice to the originating Party.
- 35.3 The Parties will not assert one of the exceptions in paragraph 35.2 above, including any available under the Freedom of Information Act even if applicable, in the absence of any governmental interests which would be jeopardized by access or release as determined solely by that Party.
- 35.4 Subject to CERCLA § 120 (j) (2), 42 U.S.C. § 9620 (j) (2), any documents required to be provided by Section VII, (Consultation with EPA), and analytical data showing test results will always be releasable in final draft form and no exemption shall be asserted by any party.
- 35.5 A determination to withhold a document for one of the reasons specified above shall not be subject to Section XIII (Dispute Resolution). Any Party objecting to another Party's determination may pursue the objection through the determining Party's appeal procedures and judicial review if applicable.
- 35.6 This Section does not affect any requirement pertaining to press releases contained in Section XXVI, (Community Relations) of this Agreement.

XXXVI. TRANSFER OF REAL PROPERTY

- 36.1 The NGB shall not enter into any contract for the sale or other transfer of real property owned by the United States at MMR unless:
- (i) such transaction is completed in accordance with the requirements of Section 120(h) of CERCLA, 42 U.S.C. § 9620(h), and regulations thereunder, to the extent applicable, and
 - (ii) the NGB complies with the requirements of Section 9.8 in connection with such transaction.
- 36.2 In cases where the NGB enters into a contract for the sale of real property owned by the United States at MMR, the NGB recognizes and acknowledges a continuing obligation under

CERCLA and this Agreement to ensure that all Remedial Action necessary to protect human health and the environment due to past or future releases of Hazardous Substances, contaminants, or pollutants resulting from activities on MMR will be taken on such property at NGB expense. Such obligations exist where:

- (i) the transaction involves a sale of real property completed in accordance with CERCLA Section 120(h), 42 U.S.C. § 9620(h), where such property includes all or a portion of an Area of Contamination; or,
- (ii) the transaction involves a sale of real property which does not include an Area of Contamination at the time of the transaction, if such property or any portion of it later becomes an Area of Contamination under this Agreement.

36.3 The NGB recognizes and acknowledges that where it has the obligation to take Remedial Action pursuant to its obligations under CERCLA and this Agreement, as provided in Paragraph 36.2, the party to whom the NGB transfers an interest, including successors in interest and lessees and sublessees, will not assume, as between the parties to such transfer, any liability or responsibility for Remedial Actions which are necessary due to releases of Hazardous Substances, pollutants, or contaminants resulting from activities at MMR.

XXXVII. SEVERABILITY

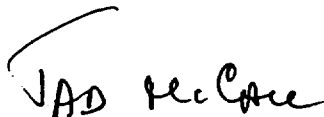
37.1 If any provision of this Agreement is ruled invalid, illegal, or unconstitutional, the remainder of the Agreement shall not be affected by such ruling.

XXXVIII. SIGNATURE PAGES

The undersigned representative of the U.S. Department of the Air Force certifies that he/she is fully authorized to consent to the terms and conditions of this Agreement and to legally bind such Party to this Agreement.

UNITED STATES DEPARTMENT OF THE AIR FORCE

BY:




Thomas W. L. McCall, Jr.
Deputy Assistant Secretary of
the Air Force (Environment,
Safety and Occupational Health)



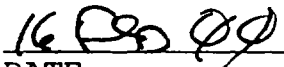
DATE

The undersigned representative of the National Guard Bureau certifies that he/she is fully authorized to consent to the terms and conditions of this Agreement and to legally bind such Party to this Agreement.

UNITED STATES DEPARTMENT OF DEFENSE, NATIONAL GUARD BUREAU

BY: 


Russell C. Davis
Lieutenant General, U.S. Air Force
Chief, National Guard Bureau



DATE

The undersigned representative of the U.S. Environmental Protection Agency certifies that he/she is fully authorized to consent to the terms and conditions of this Agreement and to legally bind such Party to this Agreement.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

BY: 
John P. DeVillars
Regional Administrator
Environmental Protection Agency
Region I

12/11/99
DATE

APPENDIX I

INSTALLATION RESTORATION PROGRAM (IRP), DOCUMENTS
REVIEWED, AND ADDITIONAL REQUIREMENTS

APPENDIX I

INSTALLATION RESTORATION PROGRAM (IRP) DOCUMENTS REVIEWED AND ADDITIONAL REQUIREMENTS

"Massachusetts Military Reservation, Site SD-5 Dry Well Focused Feasibility Study" dated September 1989 (accepted January 11, 1990).

"Final Report: Technical Report, Phase I of the MW-603 Groundwater Study" dated March 1990 (accepted August 15, 1990).

"Final Report: Technical Memorandum, Phase II Investigations of the MW-603 Groundwater Study" dated March 1990 (accepted August 15, 1990).

"Field Investigation-Summer/Fall 1986, Task 2-1, Base Landfill, Petrol Fuel Storage Area, and Fire Training Area, Volumes I and II" dated July 1988 (accepted September 6, 1990).

"Final Field Sampling and Analysis Plan, MW-1202 Groundwater Study" dated June 1990 (accepted September 18, 1990).

"Water Supply Study at Massachusetts Military Reservation, Cape Cod, Massachusetts, Final Report: Task 3-1" dated April 15, 1987 (accepted September 24, 1990).

"Phase II/IVA-Remedial Investigation/Feasibility Study Work Plan" dated June 1987 (accepted September 24, 1990).

"Hydrogeologic Summary, Task 1-8 Status" dated April 1989 (accepted September 24, 1990).

"Task 5-Mashpee Study, Monitoring Well Installation Work Plan" dated February 1987 (accepted September 26, 1990).

"Sewage Treatment Plant and Off-Reservation Groundwater Studies at Massachusetts Military Reservation, Massachusetts, Final Report: Task 1" dated April 15, 1987 (accepted September 26, 1990).

"Ashumet Pond Trophic State and Eutrophication Control Assessment, Task 1-4, Final Report" dated March 1988 (accepted September 26, 1990).

"Task 2-3, Site Assessment of Coal Yard 2 (CY-2)" dated August 1988 (accepted October 1, 1990).

"Final Site Inspection Report-Field Investigation Work Conducted Fall, 1987-Installation Restoration Program, Task 2-3A, Volumes I and II" dated March 1989 (accepted October 1, 1990).

"Final Report-Work Plan for the Groundwater Plume in Ashumet Valley" dated March 1990 (accepted October 15, 1990).

"Final Remedial Investigation Field Sampling and Analysis Plan, Six Priority I Sites, Task 2-5" dated June 1990 (accepted October 15, 1990).

"Water Supply Study at Massachusetts Military Reservation, Massachusetts, Final Report: Task 3-3" dated August 1987 (accepted October 16, 1990).

"Final Report-Site Inspection Report, Field Investigation Work Conducted Spring-Summer 1988, Task 2-3B, Volumes I and II" dated February 1990 (accepted November 5, 1990).

"Final Remedial Investigation Field Sampling and Analysis Plan-Remaining Priority I Sites, Task 2-5B" dated March 1990 (accepted November 5, 1990).

"Decision Document Site FS-20, Current Product Tank No. 88" dated February 1990. (accepted May 28, 1991)

"Decision Document Site CS-10, Tank Wash Operable Unit" dated February 1990. (accepted May 28, 1991)

REPORTS WITH EPA COMMENTS

"Decision Document for 15 Sites" dated June 1989 (comment letter April 30, 1990).

"Phase I: Records Search-Air National Guard, Camp Edwards (ARNG), U.S. Air Force and Veteran's Administration Facilities at Massachusetts Military Reservation, Massachusetts, Final Report: Task 6" dated December 11, 1986 (comment letter August 16, 1990).

"Phase I: Records Search-U.S. Coast Guard Facilities at Massachusetts Military Reservation, Massachusetts, Final Report: Task 7" dated December 11, 1986 (comment letter August 16, 1990).

"Environmental Justification Report-Study Area LF-1; Northwest Operable Unit Cells" dated May 1990 (comment letter September 4, 1990).

"Comprehensive Plan for the Installation Restoration Program at Massachusetts Military Reservation" dated April 1987 (comment letter September 4, 1990).

"Final Report: Site Inspection Work Plan, Priority 2 and 3 Sites, Task 2-4" dated February 1990 (comment letter September 10, 1990).

"Remedial Technology Evaluation and Applicable or Relevant and Appropriate Requirements Handbook" dated August 1989 (comment letter September 24, 1990).

"Final Report, Task 5: Mashpee Groundwater Study" dated August 1990 (comment letter October 3, 1990).

"Quality Assurance Program Plan, Technical Support for Environmental Programs at Federal Installations, Volumes 1-4" dated October 1988, revised August 1989 (comment letter October 9, 1990).

"Draft Site Inspection Report Addendum- Results of Additional SI Sampling Conducted Summer of 1989- Installation Restoration Program, Task 2-3C" dated August 1990 (Comment letter dated February 11, 1991).

"Technical Memorandum, Johns Pond Groundwater Underflow Study Interim Report" dated January 1991 (comment letter dated March 18, 1991).

"Draft Technical Report, Study Area FS-25" dated January 1991 (comment letter dated March 18, 1991).

Draft Feasibility Study, Study Area FS-25, Source Control Operable Unit" dated January 1991 (Comment letter dated March 22, 1991).

"Decision Document for 11 Study Areas" dated August 1990. (Comment letter dated May 28, 1991)

"Draft Final Report- Briarwood Subdivision Groundwater Public Health Risk Assessment" dated February 1991. (Comment letter dated April 27, 1991)

"Draft Phase I of the Ashumet Valley Groundwater Study, Volumes I and II" dated March 1991. (Comment letter dated **May 13**, 1991)

APPENDIX II

IRP DOCUMENTS TO BE REVIEWED WITHIN 120 DAYS
OF EFFECTIVE DATE OF THIS AGREEMENT

APPENDIX II

INSTALLATION RESTORATION PROGRAM (IRP) DOCUMENTS TO BE REVIEWED WITHIN 120 DAYS OF EFFECTIVE DATE OF THIS AGREEMENT

"Installation Restoration Program-Decision Document-Site Coal Yard-2" dated October 1988.

"Decision Memo for CY-4, LF-4, CS-13, and CS-18" dated August 15, 1989.

"Decision Document- Study Area SD-1, Runway/Aircraft Maintenance Storm Drainage Ditch" dated February 1991.

"Decision Document- Study Area CS-8/FS-21 Operation Motor Pool, OMS-22/ Current Product Tank No. 90" dated February 1991.

"Draft Remedial Investigation Report- AVGAS Fuel Valve Test Dump Site, FS-1 Study Area" dated March 1991.

APPENDIX III

DEADLINES AND SCHEDULES

APPENDIX III

DEADLINES AND SCHEDULES

- A. In accordance with the Deadlines found in Timetable 1, the NGB shall address, in Proposed Plans submitted to EPA, the number of Areas of Contamination identified in Timetable 1 for each fiscal year.
- B. The NGB and EPA agree to incorporate as many AOCs into each ROD as is practicable and still remain in compliance with CERCLA, The NCP and the Agreement.
- C. The NGB shall submit Documents to EPA in accordance with Timetable 2 below and Paragraph 7.2 of the Agreement.

TIMETABLE 1

SUBMITTAL OF PROPOSED PLANS TO EPA

FISCAL YEAR ²	NUMBER OF AREAS OF CONTAMINATION ¹
1992	9
1993	0
1994	9
1995	14
TOTAL	32

NOTES:

- 1. Includes ten Priority 2 and 3 study areas which are anticipated to become AOC's.
- 2. Fiscal year ends on September 30.

**Federal Facility Agreement
Appendix III Timetable 2
Enforceable Milestones - Source Area Response Actions**

Site	Site Investigation (12)	Decision Document (12)	RI/FS Work Plan	Remedial Investigation	Feasibility Study	Proposed Plan	Record of Decision (12)	Record of Decision (12)	100% Remedial Design	Project Closeout Report
CY-2 Former USAF/ANG Coal Yard Storage Yard	2000-08-01	2000-08-01								
CS-10 Tank Wash Operable Unit	2000-08-01	2000-08-01								
FS-20 Current Product Tank 88	2000-08-01	2000-08-01								
LF-5 VA Cemetery Rubble Landfill (1)	2000-08-01	2000-08-01								
LF-6 USN Rubble Landfill (1)	2000-08-01	2000-08-01								
LF-7 Radon Tube Burial Landfill (1)	2000-08-01	2000-08-01								
CS-7 Organizational Maintenance Shop 6 (1)	2000-08-01	2000-08-01								
CS-12 VA Cemetery Roads and Grounds Shop (1)	2000-08-01	2000-08-01								
FS-15 Runway #5 Fuel Spill (1)	2000-08-01	2000-08-01								
FS-16 Helicopter Maintenance (1)	2000-08-01	2000-08-01								
CS-5 CG Carpenter Shop (1)	2000-08-01	2000-08-01								
CS-7 CG Dry Cleaning Facility (1)	2000-08-01	2000-08-01								
LF-2 CG Rubble Landfill (1)	2000-08-01	2000-08-01								
LF-3 CG Rubble Landfill (1)	2000-08-01	2000-08-01								
LF-1 CG Rubble Landfill	2000-08-01	2000-08-01								
LF-3 Northeast Landfill	2000-08-01	2000-08-01								
FS-25 Building 167 Area Fuel Spill	2000-08-01	2000-08-01								
FS-28 Building 3444 Fuel Tank Area USCG	2000-08-01	2000-08-01								
CY-1 Former Army/VA Hospital Coal Yard	2000-08-01	2000-08-01								
CY-3 Former Army/VA Hospital Coal Yard	2000-08-01	2000-08-01								
FS-3 Johns Pond Road Fuel Dump	2000-08-01	2000-08-01								
CS-6 Current ANG Maintenance Shop	2000-08-01	2000-08-01								
FS-22 ANG Motor Pool	2000-08-01	2000-08-01								
CS-6 Other Maintenance Shops USCG	2000-08-01	2000-08-01								
FS-2 CG Hot-Mix Asphalt Plant	2000-08-01	2000-08-01								
CS-1 North Truck Road Motor Pool	2000-08-01	2000-08-01								
CS-2 East Truck Road Motor Pool	2000-08-01	2000-08-01								
CS-3 South Truck Road Motor Pool	2000-08-01	2000-08-01								
CS-8 Organizational Maintenance Shop 22	2000-08-01	2000-08-01								
CS-8 CG/CS-22 (13)	2000-08-01	2000-08-01								
FS-21 Current Product Tank 90	2000-08-01	2000-08-01								
FS-23 South Truck Road Fuel Spill	2000-08-01	2000-08-01								
CS-9 Former Main USAF Motor Pool	2000-08-01	2000-08-01								
CS-14 Building 156 Leach Pit	2000-08-01	2000-08-01								
FS-14 Range E-3 Spill	2000-08-01	2000-08-01								
CS-2 CG Hangar 3170 Areas	2000-08-01	2000-08-01								
SD-1 Storm Drainage Disposal Site	2000-08-01	2000-08-01								
FS-27 Conner Ave Telephone Line Soil Excavation	2000-08-01	2000-08-01								
FS-2 Railroad Fuel Station (2)	2000-08-01	2000-08-01								
CS-4 West Truck Road Motor Pool (3)	2000-08-01	2000-08-01								
CS-4 (North) West Truck Road Motor Pool (4)	2000-08-01	2000-08-01								
CS-18 Propellant Burning Area (5)	2000-08-01	2000-08-01								
CS-19 Impact Range Chemical Dump Site (5)	2000-08-01	2000-08-01								
Other Activities										

**Federal Facility Agreement
Appendix III Timetable 2
Enforceable Milestones - Source Area Response Actions**

Site	Site Investigation (12)	Decision Document (12)	Decision Document (12)	RIFS Work Plan	Remedial Investigation	Feasibility Study	Proposed Plan	Record of Decision (12)	100% Remedial Design	Project Closeout Report
LF-1 MMR Main Sanitary Landfill Source										
LF-1 Source Northwest Groundwater Operable Unit (8)										
CS-1 CG Transmitter Site										
6 Area of Concern Source Area Cleanup										
SD-2 Storm Drainage Disposal Site (9)									06-Dec-99	
SD-3 Storm Drainage Disposal Site (9)									06-Dec-99	
SD-4 Storm Drainage Disposal Site (9)									06-Dec-99	
SD-5 Storm Drainage Disposal Site - Source (9)									06-Dec-99	
LF-2 Original Base Landfill (9)									06-Dec-99	
FS-5 Apron Near Aqueduct (9)									06-Dec-99	
FS-6 Airfield Apron (9)									06-Dec-99	
FS-8 Airfield Apron (9)									06-Dec-99	
FS-10 Petroleum Fuel Storage Area (9)									06-Dec-99	
FS-11 Fuel Storage Area (9)									06-Dec-99	
Petroleum Fuels Storage Area (PFSA) (9)									06-Dec-99	
FTA-2 Former Fire Training Area (9)									06-Dec-99	
FTA-3 Former Fire Training Area (9)									06-Dec-99	
CY-4 Current Coal Storage Yard (9)									06-Dec-99	
Priority 2 and 3 Sites and DOOU										
CS-5 Former Refueler Maintenance Shop (14)									06-Dec-99	
CS-11 Former Pest Control Area (14)									06-Dec-99	
CS-15 Former Engine Run-Up Area (14)									06-Dec-99	
FS-4 Current Product Tank 100101 (14)									06-Dec-99	
FS-18 Fuel Transfer Point (14)									06-Dec-99	
CS-4 CG Hanger 128 Area (14)									06-Dec-99	
FS-1 CG Hanger 128 Fuel Spill (14)									06-Dec-99	
FS-7 Current Product Tank 118 (14)									06-Dec-99	
CS-19CS-17 DOOU (14)									06-Dec-99	
CS-3 CG BX Service Station USCG									06-Dec-99	
CS-16CS-17 STP Sludge Disposal									06-Dec-99	
CS-10 UTES / FS-24 BOMARC Site Source									06-Dec-99	
FS-9 Current Product Tank 106									06-Dec-99	
FS-17 Former WWII Motor Pool/Fuel Transfer Point									06-Dec-99	
FS-19 Former MOGAS Fuel Storage & Transfer Point									06-Dec-99	
FS-1 AV/GAS Test Dump Site									06-Dec-99	
LF-4 John's Pond Dump-Off Base (10)										
OS-13 Former Contractor Yard (11)										
Date/Activity										

Federal Facility Agreement
Appendix III Timetable 2
Enforceable Milestones - Source Area Response Actions

NOTES:

1. These 11 sites were identified in the Phase I Records Search. After a site visit was conducted with EPA/DEP, it was agreed that no further activities were warranted and a no further action Decision Document would be prepared for the sites.
2. A draft RI for FS-2 was issued in Aug 91 and there were subsequent follow on supplemental investigations. AFCEE will be submitting a completion schedule to EPA in September 1999.
3. Cleanup at the site was performed under a non-time critical removal action in FY95-97.
4. Once the Supplemental Site Investigation is completed, AFCEE will submit a draft DD in six months or a draft RI/FS Work Plan in eight months.
5. The Site Investigation is complete. A Supplemental Site Investigation is being accomplished. The draft SSI Tech Memo is due 5 Feb 2000.
6. The LF-1 Groundwater Operable Unit Remedial Investigation and the results from downgradient field work will be evaluated to determine the deposition of the LF-1 Northwest Operable Unit. Upon finalization of the RI, AFCEE will either submit a "No Further Action Proposed Plan" within six months or a "Feasibility Study" within eight months.
7. Cleanup at the site was performed under a time critical removal action in FY 96-97.
8. Cleanup at the site was performed under a non-time critical removal action in FY95-97.
9. This grouping of sites is referred to as the "B Areas of Concern (B AOC)". All the sites are proceeding on the same schedule.
10. Depending upon the recommendations of the LF-4 Site Investigation Report, AFCEE will either submit a draft Decision Document by 31 December 1999 or a draft Remedial Investigation Work Plan by 31 January 2000.
11. The site was initially identified through the Phase I Records Search as an Area of Concern. Currently, AFCEE is investigating whether the site is appropriately addressed under the FFA because of questions over property ownership.
12. These documents are not enforceable milestones but are shown for information purposes.
13. A Preliminary Assessment/ Site Investigation is underway to determine if contamination exists which warrants further investigation.
14. Final EECA completed Oct 98. Draft AM submitted Feb 99.

Federal Facility Agreement

Appendix III Timetable 3

Enforceable Milestones - Plume Response Actions

Site	Draft Site Investigation (4)	Draft RIFS Work Plan	Draft Remedial Investigation	Draft Feasibility Study	Draft Proposed Plan	Draft Record of Decision	Final Record of Decision (6)	FINAL Remedial Design	Draft Recirc Exec Plan	Complete 1st 10 Wells	System Start-up Recirc Wells
CS-4 West Truck Road Motor Pool											
FS-12 Underground Fuel Line Range											
SD-5 North Containment System											
SD-5 South Remedial Action - Recirc (1)											
SD-5 South Remedial Action - ETR (1) (7)											
LF-1 Groundwater Operable Unit (1)											
East Briarwood/Western Aquifer (1) (2)											
Ashmet Valley Groundwater Operable Unit (3)											
Ashmet Pond Draft Phosphorus Management Plan											
AV Aerial Fence (With Falmouth Conservation Area)											
CS-10 Groundwater Operable Unit (1)											
CS-10 Sandwich Road Fence											
CS-10 Southern/ Southwest Fence											
CS-10 In-Plume											
CS-10 GWOU Leading Edge/ Final ROD											
FS-1 AVGAS Test Dump Site											
SWOU AOC EDB Release											
CS-4 Plume (TCE & PCE)											
CS-20 Plume (TCE & PCE)											
CS-21 Plume (TCE)											
FS-13 Underground Fuel Line Containment											
SWOU (FS-28) EDB Plume											
SWOU (FS-28) EDB Plume											

NOTES:

- For those plumes covered by the Sept 95 ROD, subsequent determinations were made that additional evaluation needed to be conducted and enforceable milestones were established to monitor progress. Such evaluations included recirculating wells and pilot extraction, treatment and reinjection systems prior to development of the full scale execution plan.
- Periodic Long Term Monitoring being conducted; results presented in Annual Reports.
- The Ashmet Valley Plume has as its source areas FTA-1 and CS-16/CS-17.
- The draft SJ Report is not an enforceable date but is shown for information purposes.
- Draft Phosphorus Recommendation/Action Schedule to be submitted by the enforceable milestone date of 18 February 2000. A date for system startup will be determined after review of the document and public comment.
- The Final ROD is not an enforceable date but is shown for information purposes.
- Work also entails construction of Time Critical Remedial Action for the TCE plume on Hoophole Road adjacent to SD-5 South.

Federal Facility Agreement
Appendix III Timetable 3
Enforceable Milestones - Plume Response Actions

Site	Draft Reclt Evaluation Rpt	Draft Pilot ETR Exec Plan	Pilot ETR Test Data Rpt	Full Scale Execution Plan (Draft)	Draft Remedial Design	Complete Fndtn & 6 Wells	Wellfield Design Report (Draft)	Draft Mgmt Plan	System Start-up
CS-4 West Truck Road Motor Pool									
FS-12 Underground Fuel Line Range									
SD-5 North Containment System									
SD-5 South Remedial Action - Reclt (1)									
SD-5 South Remedial Action - ETR (1) (7)									
LF-1 Groundwater Operable Unit (1)									31-Jan-00
East Briarwood/Western Aquifer (1) (2)									
Ashumet Valley Groundwater Operable Unit (3)									
Ashumet Pond Draft Phosphorus Management Plan									
AV Atrial Fence (With Fairmount Conservation Area)									(5)
CS-10 Groundwater Operable Unit (1)									28-Nov-99
CS-10 Sandwich Road Fence									
CS-10 Southern Southwest Fence									30-Apr-00
CS-10 In-Plume									
CS-10 GWOU/Leading Edge/ Final ROD									
FS-1 AVGAS Test Dump Site									
SWOU AOC EDB Release									
CS-4 Plume (TCE & PCE)									
CS-20 Plume (TCE & PCE)									
CS-21 Plume (TCE)									
FS-13 Underground Fuel Line Containment									
SWOU (FS-28) EDB Plume									
SWOU (FS-29) EDB Plume									

APPENDIX IV

COMMUNITY RELATIONS PLAN (CRP)/COMMUNITY INVOLVEMENT PLAN

The Community Relations Plan (CRP)/Community Involvement Plan for the Site is currently undergoing revisions. Following a public comment period and incorporation of public comments into the current revision of the plan, the plan is expected to be finalized in the year 2000 and will be included herein as Appendix IV.

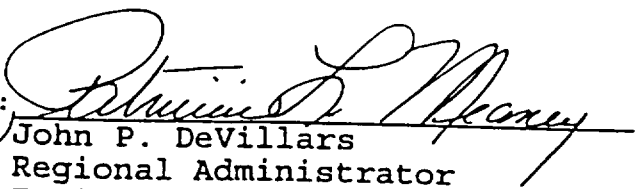
APPENDIX V

AGREEMENT ADDED PURSUANT TO AMENDMENT NO. 1
DATED MAY 15, 1996

The undersigned representative of the U.S. Environmental Protection Agency certifies that he/she is fully authorized to consent to the terms and conditions of this Amendment No. 1 to the MMR Federal Facility Agreement and to legally bind such Party hereto.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

BY:


John P. DeVillars
Regional Administrator
Environmental Protection Agency
Region I

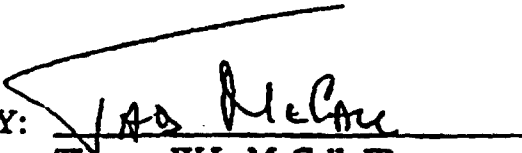
5/15/96

DATE

The undersigned representative of the U.S. Department of the Air Force certifies that he is fully authorized to consent to the terms and conditions of this Amendment Number One to the MMR Federal Facility Agreement and to legally bind such Party hereto.

UNITED STATES DEPARTMENT OF THE AIR FORCE

BY:


Thomas W.L. McCall, JR.
Deputy Assistant Secretary of the Air Force
(Environment, Safety and Occupational Health)

MAY 15 1996

Date

The undersigned representative of the National Guard Bureau certifies that he/she is fully authorized to consent to the terms and conditions of this Amendment No. 1 to the MMF Federal Facility Agreement and to legally bind such Party hereto.

UNITED STATES DEPARTMENT OF DEFENSE, NATIONAL GUARD BUREAU

BY: 

EDWARD D. BACA
Lieutenant General, U.S. Army
Chief, National Guard Bureau

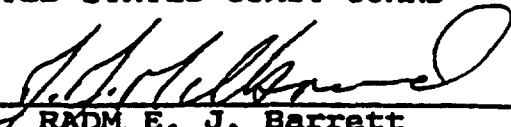
15 May 1996
DATE

RUSSELL C. DAVIS
Major General, USAF
Vice Chief, National Guard Bureau

The undersigned representative of the U.S. Coast Guard certifies that he/she is fully authorized to consent to the terms and conditions of this Amendment No. 1 to the MMR Federal Facility Agreement and to legally bind such Party hereto.

UNITED STATES COAST GUARD

BY:


RADM E. J. Barrett
Chief of Systems
U.S. Coast Guard

5/15/96
DATE

AMENDMENT NO. 1 TO FEDERAL FACILITY AGREEMENT

Pursuant to Section XXVIII of the Federal Facility Agreement (FFA) for the Massachusetts Military Reservation (MMR) Superfund Site signed on July 17, 1991, and in recognition of extraordinary circumstances at MMR, the U.S. Environmental Protection Agency, Region I, the Department of the Air Force, the National Guard Bureau, and the U.S. Coast Guard hereby amend the FFA as follows. The Parties agree that as provided in FFA Section 28.1, this Amendment and the attached Appendix V will become effective on May 15, 1996, that the requirements of this Amendment and the attached Appendix V are incorporated into the FFA and that these requirements are enforceable under the FFA. This Amendment will be made available for public review and comment for a period of 45 days.

1) Substitute the following for FFA Section 2.1:

The Parties to this Agreement are the EPA, the National Guard Bureau (NGB) (representing all other United States Department of Defense (DOD) agencies who own or control property at the Site), the Department of the Air Force (USAF) and the United States Coast Guard (USCG). When reasonably necessary to effectuate efficient and effective management of their responsibilities under the Agreement, the NGB and the USAF may transfer federal lead agency status from one to another during the performance of their responsibilities under the FFA. Such change of DOD federal lead agency status is not subject to dispute nor does it affect the binding nature of this Agreement or its enforceability. The redesignated lead agency will notify the other Parties within fourteen (14) days of any such change. The terms of this Agreement and Appendix V shall apply to and be binding upon the EPA, the NGB, the USAF and the USCG.

2) Add the attached Appendix V to the FFA.

APPENDIX V

1. By May 15, 1996, the USAF, with input from NGB, will present to the public, EPA, the Massachusetts Executive Office of Environmental Affairs (EOEA), and the Massachusetts Department of Environmental Protection (MA DEP) for review and comment an initial draft of a comprehensive plume response plan and schedule. Such plume response plan and schedule will propose specific actions and milestones for addressing contamination of the following groundwater plumes emanating from MMR: the seven plumes addressed in the Interim Record of Decision dated September 1995, the CS-4 plume and the deeper EDB plume in the vicinity of the CS-4 plume. EPA will review and comment on the draft comprehensive plume response plan and schedule within 30 days. Following a 45-day period of public review and comment and no later than July 15, 1996, the USAF will address the recommendations of the communities, EPA, EOEA and MA DEP in a revised comprehensive plume response plan and schedule. In conjunction with issuance of the comprehensive plume response plan and schedule, the USAF will respond in writing regarding each of the significant comments received in writing or orally at public meetings during the public comment period. Upon issuance on July 15th, 1996, the comprehensive plume response plan and schedule shall be incorporated into the FFA and be made enforceable thereunder.

2. By May 15, 1996, in conjunction with the development of the initial draft of the comprehensive plume response plan, the USAF, with input from NGB, will also present to the public, EPA, EOEA and MA DEP for review and comment the following:

- a) an initial draft of a timeline and critical path method network analysis. The timeline will describe the known project activities and describe their sequential relationship. The critical path method network analysis will describe the assumptions used to develop the timeline, identify the set of activities which drive the project and dates, and highlight opportunities where focused effort could shorten the overall length of the project; and

- b) a strategic decision analysis consisting of criteria development, alternative identification, selection methods and contingency plan development for adverse outcomes.

EPA will review and comment on the timeline, critical path method network analysis, and strategic decision analysis within 30 days. Following a 45-day period of public review and comment and no later than July 15, 1996, the USAF will address the recommendations of the communities, EPA, EOEA and MA DEP in a final critical path method network analysis and a

final strategic decision analysis process. In conjunction with the issuance of such documents, the USAF will respond in writing regarding each of the significant comments received in writing or orally at public meetings during the public comment period.

3. The USAF will ensure, subject to the requirements of fiscal law and the existing FFA, that sufficient funds will be made available in time to meet plume response requirements.

4. The USAF has assigned additional, highly-qualified staff from the Air Force Center for Environmental Excellence (AFCEE) to lead and implement the comprehensive plume response plan.

5. The USAF and the EPA will maintain continued support for the technical review and evaluation teams until such time as all outstanding human health, ecological and hydrological issues with regard to design of the plume response remedy have been resolved. If the USAF and the NGB determine that the teams are no longer needed, they will consult with the public, EPA, EOE and MA DEP before discontinuing such teams.

6. The USAF, with input from NGB, will initiate a program to pilot test recirculating well technology. If the USAF concludes that use of recirculating well technology is not appropriate at any of the plumes, it will consult with the public, EPA, EOE and MA DEP before making this determination final.

7. The NGB and the USAF have examined all possible contracting procedures and will utilize the full spectrum of contracting vehicles available to fully implement a comprehensive plume response plan at MMR.

8. The USAF and the NGB will involve the community as a full partner in design, construction and operation discussions. This involvement will include frequent public meetings and other specific outreach measures that ensure public involvement in the review of the comprehensive plume response plan and schedule. The USAF and the NGB will initiate a 45-day public comment period on May 15, 1996 to solicit community input on the initial draft comprehensive plume response plan and schedule and, during that 45-day period, will host public meetings in each of the four affected towns. The USAF and the NGB will address and respond to the recommendations of the communities, EPA, EOE and MA DEP as provided for in Paragraphs 1 and 2 of this Appendix.

APPENDIX VI

**PLUME RESPONSE DECISION CRITERIA AND SCHEDULE ADDED
PURSUANT TO AMENDMENT NO. 2 DATED APRIL 25, 1997**

AMENDMENT NO. 2 TO FEDERAL FACILITY AGREEMENT

Pursuant to Section XXVIII of the Federal Facility Agreement (FFA) for the Massachusetts Military Reservation (MMR) Superfund Site signed on July 17, 1991 and previously amended on May 15, 1996, the U.S. Environmental Protection Agency, Region I, the Department of the Air Force, the National Guard Bureau, and the U.S. Coast Guard hereby amend the FFA. As provided in FFA Section 28.1, the Parties agree that this Amendment No. 2, the attached FFA Milestone Summary (which is being added to the FFA as Appendix III, Timetable 3) and the attached Plume Response Decision Criteria and Schedule (which is being added to the FFA as Appendix VI) will become effective on April 25, 1997. The Parties agree that the requirements of this Amendment, the FFA Milestone Summary and Plume Response Decision Criteria and Schedule are incorporated into the FFA and that these requirements are enforceable under the FFA, including, but not limited to, Sections II, XVII, XX and XXI of the FFA, and shall constitute a "term" or "condition" of the FFA, subject to the following limitation: USAF's commitment to use the evaluation procedure in the Plume Response Decision Criteria and Schedule document is the sole enforceable component of that document, with the exception of the FFA Milestone Summary (Appendix V to that document), whose milestones are enforceable. This Amendment incorporates significant comments received during the public comment period which extended from February 10 through March 10, 1997.

The FFA is hereby amended as follows:

1) The list of Appendices following the Table of Contents is amended to reference Appendix V (added pursuant to Amendment No. 1 dated May 15, 1996) and Appendix VI (Plume Response Decision Criteria and Schedule, which is being added pursuant to this Amendment No. 2).

2) The attached FFA Milestone Summary (Plume Response Enforceable Schedule Summary) is added as Timetable 3 to Appendix III of the FFA (Deadlines and Schedules).

3) The following paragraph is being added to Section XIV (Deadlines and Schedules):

14.6 The Parties agree to the milestones established in Timetable 3 of Appendix III - FFA Milestone Summary (Plume Response Enforceable Schedule Summary). Timetable 3 includes enforceable milestones for activities which extend beyond the current fiscal year through system start-up for each plume. The Parties agree that the system start-up dates contained in Timetable 3 represent the latest dates by which system start-up will be achieved. After the decision point milestone has

been reached for each plume, a Full Scale Implementation Plan shall be submitted within 60 days of such decision point which contains a more detailed schedule for implementation of the selected remedy. Once the Parties have agreed to the milestones included in the Full Scale Implementation Plan, any such milestones which are enforceable shall be incorporated into Timetable 3. The Parties agree that extensions to milestones preceding the system start-up date which are granted by EPA may be grounds for extension of the corresponding system start-up milestone, but shall not automatically be grounds for any such extension. The public shall be regularly advised of all extensions to enforceable milestones under Timetable 3.

- 4) Paragraph 14.6 of the FFA shall be renumbered as 14.7.
- 5) The attached Plume Response Decision Criteria and Schedule is added to the FFA as Appendix VI.
- 6) The following item is being added to list of Study Areas and Areas of Contamination contained in paragraph 5.24 of the FFA:

65	FS-28*	Ethylene Dibromide Source Area and Plume	RI/FS
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The undersigned representative of the U.S. Environmental Protection Agency certifies that he/she is fully authorized to consent to the terms and conditions of this Amendment No. 2 to the MMR Federal Facility Agreement and to legally bind such Party hereto.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

BY: 


John P. DeVillars
Regional Administrator
Environmental Protection Agency
Region I

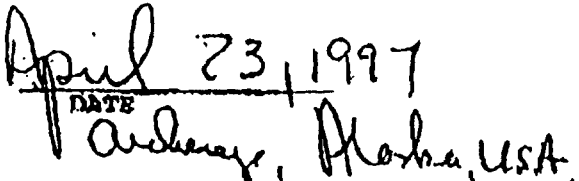
4/24/97
DATE

The undersigned representative of the U.S. Department of the Air Force certifies that he/she is fully authorized to consent to the terms and conditions of this Amendment No. 2 to the MMR Federal Facility Agreement and to legally bind such Party hereto.

UNITED STATES DEPARTMENT OF THE AIR FORCE

BY:


 Thomas W. L. McCall, Jr.
 Deputy Assistant Secretary of
 the Air Force (Environment,
 Safety and Occupational Health)


 DATE
 April 23, 1997
 Archer, Alaska, USA.

The undersigned representative of the National Guard Bureau certifies that he/she is fully authorized to consent to the terms and conditions of this Amendment No. 2 to the MMR Federal Facility Agreement and to legally bind such Party hereto.

UNITED STATES DEPARTMENT OF DEFENSE, NATIONAL GUARD BUREAU

BY:


Lt. General Edward Baca
Chief, National Guard Bureau

24 April 1997
DATE

The undersigned representative of the U.S. Coast Guard certifies that he/she is fully authorized to consent to the terms and conditions of this Amendment No. 2 to the MMR Federal Facility Agreement and to legally bind such Party hereto.

UNITED STATES COAST GUARD

BY: 

RADM E. J. Barrett
Assistant Commandant for Systems
U.S. Coast Guard

4-24-97

DATE

APPENDIX VI

PLUME RESPONSE DECISION CRITERIA AND SCHEDULE

April 24, 1997

**PLUME RESPONSE DECISION CRITERIA
AND SCHEDULE**

April 24, 1997

**PLUME RESPONSE DECISION CRITERIA
AND SCHEDULE
Process Description**

April 24, 1997

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Appendix II	Explanation Of Criteria
Appendix III	Definitions
Appendix IV	Alternative Development And Selection Process Timelines and Options Implementation Timelines
	<ul style="list-style-type: none">• CS-10 Plume• Ashumet Valley Plume• LF-1 Plume• SD-5 South Plume
Appendix V	FFA Milestones Summary (Plume Response Enforceable Schedule Summary)

**PLUME RESPONSE DECISION CRITERIA
AND SCHEDULE
Process Description**

April 24, 1997

1.0 INTRODUCTION

A very important time in the clean-up phase for plumes at Massachusetts Military Reservation (MMR) is the decision point when the plume-response alternative is selected. This document presents a matrix to be used to summarize and compare response alternatives. This evaluation matrix builds upon the September 1995 Interim Record of Decision. The goal is to select a remedial alternative that achieves final cleanup solutions. There are numerous factors considered by many key participants in the screening, evaluation and selection of a response alternative. This rating system is in the form of a matrix chart called "*Plume Response Alternatives Evaluation Matrix*" and is contained in Appendix I.

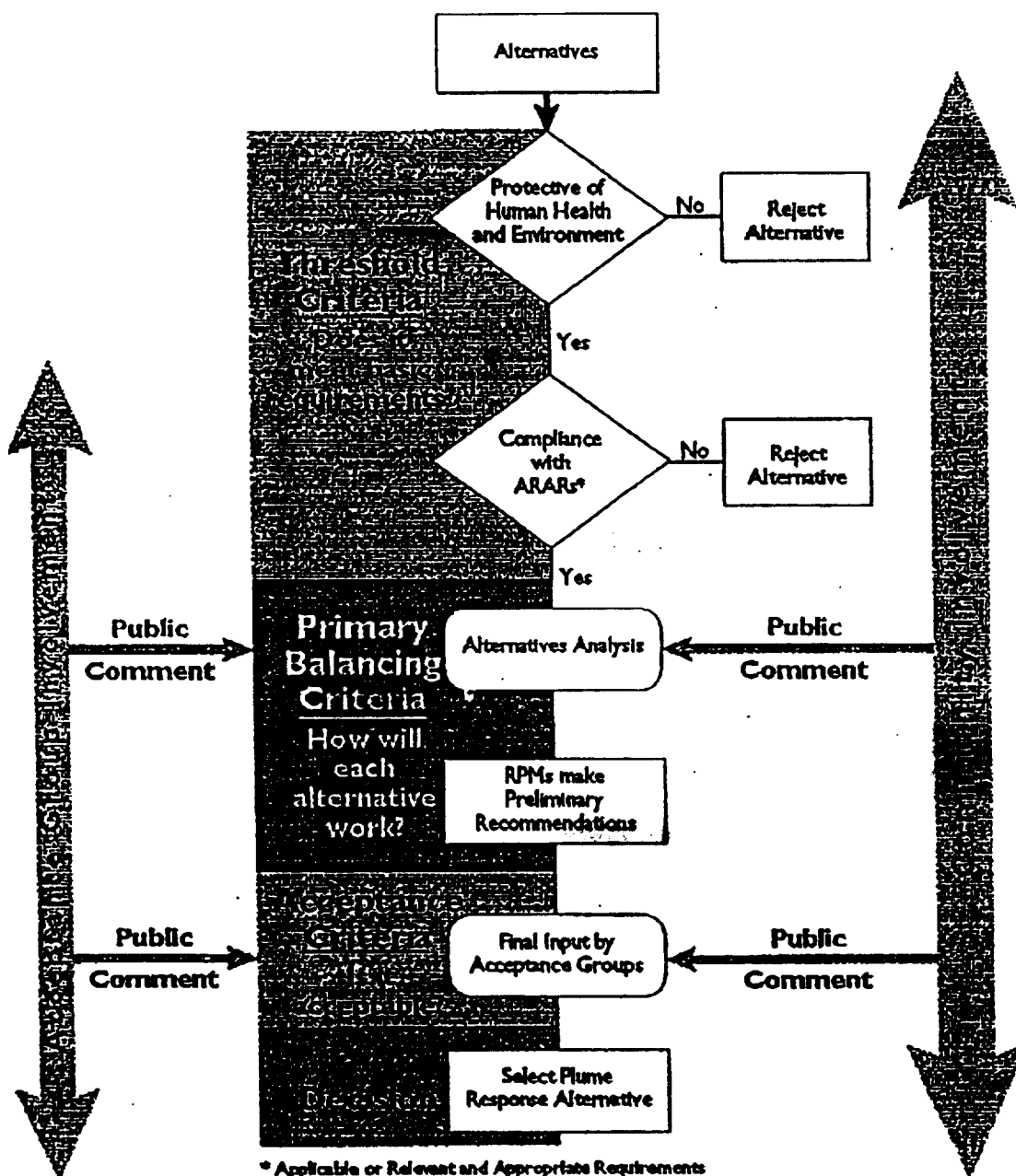
The purpose of this Alternatives Evaluation Matrix is to provide a tool whereby the audience (principally members of the public and regulatory staff) can see at a glance how individual alternatives compare one to another. Specific evaluation criteria, such as "percent capture of plume" are listed on individual rows within the matrix chart. Each alternative is listed as a column heading in the body of the chart. The estimated performance of each alternative with respect to each of the evaluation criteria is rated in comparative terms such as "low impact," "moderate impact," or "high impact" and that rating is presented in the column corresponding to the alternative being considered. The individual criteria and the manner in which the Alternatives Evaluation Matrix is filled out are presented below.

Among other key goals this matrix works toward defining cost effective alternatives that maximize capture and treatment of contaminants and cleanup of plumes to background levels if technically and economically feasible while balancing impacts on human health and the environment.

The concept is similar to that used in the magazine *Consumer Reports*, where features of similar products are compared to each other in a table so that the reader can see each product's advantages and disadvantages in order to make an informed choice on which product holds the most value for them. Figure 1.0 is the Plume Response Alternative Process Flow Diagram which shows the process of making a selection and the incorporation of the matrix in this system. The diagram also shows public involvement throughout the process.

The matrix is a table which condenses the screening process, the criteria considered and the preferred choices of stakeholder groups for each alternative considered. By nature of its design, it utilizes a qualitative approach in use and application, and must always be used in conjunction with professional judgment and sound management.

Figure 1.0, Plume Response Alternative
Process Flow Diagram



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Future use and application of this tool may require necessary refinements to the decision criteria. Such changes will be finalized through consensus of the Management Review Group.

1.1 MATRIX CRITERIA

The matrix is divided into three components; (1) Threshold Criteria, (2) Primary Balancing Criteria and (3) Acceptance Criteria. These criteria are derived from the nine criteria presented in the *"National Oil and Hazardous Substance Pollution Contingency Plan; Final Rule 40 CFR 300.430"* and modified to create this site specific tool for evaluating potential response alternatives for Massachusetts Military Reservation plumes. The following summarizes the three criteria involved.

1.1.1 Threshold Criteria

The threshold criteria are used to identify response alternatives which are protective of human health and the environment, and are expected to provide an acceptable balance between plume capture and hydrologic and ecological impacts. Threshold criteria provide "pass or fail" indication for further detailed evaluation in the Primary Balancing Criteria. Failure to pass threshold criteria results in the rejection of the alternative or requires modifications to enable it to meet threshold values.

1.1.2 Primary Balancing Criteria

The Primary Balancing Criteria are then used to evaluate alternatives which have passed the threshold criteria. The Primary Balancing Criteria are focused on four general factors or issues that relate to the overall completeness, practicality and cost of the alternative. The general factors are:

- Effectiveness and Permanence
- Effectiveness of Treatment System
- Implementability
- Cost

As can be seen in the matrix in Appendix I, evaluation with respect to each of the above factors entails consideration of a variety of sub factors. The alternatives are evaluated using both qualitative and quantitative information. The Primary Balancing Criteria present the strengths and weaknesses of each alternative for comparison to each other and will provide DoD, regulators and affected communities a tool to make a balanced and informed assessment in identifying the preferred alternative.

PLUME RESPONSE DECISION CRITERIA
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1.1.3 Acceptance Criteria

The respective organizations, agencies and community groups ("acceptance groups") must be continuously involved in the assessment of each alternative. These groups include Public at Large, Neighborhood, Process Action Teams, Senior Management Board Selectmen Representatives, Department of Public Health/ATSDR, Natural Resources Trustees, Environmental Protection Agency, Massachusetts Department of Environmental Protection, and Department of Defense. After the Threshold and Primary Balancing Criteria portions of the matrix have been assessed, each of the acceptance groups will indicate their preferred, acceptable and unacceptable alternatives.

2.0 USE OF THE ALTERNATIVES EVALUATION MATRIX

2.1 PROCESS

The effectiveness or completeness of plume containment, capture, changes in water levels in nearby water bodies and changes in groundwater flow paths or flow rates will be estimated using one or more of the following tools:

- Application of groundwater simulation models
- Pilot test results
- Extrapolation of technology data from other sites
- Engineering calculations and/or estimates
- Experience at other remediation sites

Each potential alternative must go through a series of questions and answers to assess its potential to address clean-up at MMR. It is possible that some alternatives cannot meet the strict criteria required, or that certain characteristics are unacceptable to stakeholders and the alternative will be rejected or abandoned. Alternatives which meet criteria will be evaluated and compared in the matrix.

The process for filling out the matrix is guided by the *Explanation of Criteria* provided in Appendix II. Definitions are contained in Appendix III. Wherever possible, the rating will be based on quantitative results from the groundwater modeling or other techniques listed above. For example, the percentage of plume that is assumed to be captured can be estimated and expressed as a percentage. In other cases, the rating may reflect a subjective interpretation of a calculated value or estimated range. An example in that case would be rating the ecological impacts resulting from physiochemical changes to pond

**PLUME RESPONSE DECISION CRITERIA
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inflows. Finally, some ratings may be purely subjective in that they are extrapolated from past experience or from discussions with community members.

The first draft on filling out the matrix is performed by the design teams consisting of Air Force Center For Environmental Excellence technical staff and Jacobs Engineering. These groups will provide all the back-up and draft a narrative to explain the key features and characteristics of each alternative. The design team will also have access to and interaction with the expert panels of the Technical Review and Evaluation Team and the Plume Focus Group Representatives for each plume.

The process would flow as follows;

1. The technical groups and the Remedial Project Managers will fill out the matrix for all the alternatives.
2. The Remedial Project Managers will keep the Management Review Group and respective chains of command apprised of the progress and matrix development for each plume.
3. The matrix will be presented and reviewed by the groups listed (Public at Large, Neighborhood, Process Action Teams Forums, Senior Management Board, Boards of Selectmen Representatives, Department of Public Health/Agency for Toxic Substances and Disease Registry, Natural Resources Trustees and Technical Review And Evaluation Team).
4. Neighborhood and community forums will reevaluate the alternatives. Posterboards and information sheets will be presented to the groups listed, showing how the alternatives are evaluated. Issues on the matrix will not be changed, but the rating may need to change as a result of the forums.
5. The RPMs recommend the preferred Plume Response Alternative.

By using the above process, all working groups and the public should be in a position to understand the 'preferred' alternative.

In keeping with the spirit and intent of the Community Involvement Plan, this decision-making process will be subject to review through a public comment period. This approach will ensure that community stakeholders have the opportunity to participate in the evaluation process through which remedies will be chosen to best address the Massachusetts Military Reservation contamination plumes. The public will be updated about ongoing developments through participation in public meetings, representation on the various citizen process action teams and plume focus groups, and news releases and environmental updates issued by the Installation Restoration Program office.

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Process Description

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2.2 PREFERRED ALTERNATIVES SELECTION PROCESS

Each plume is unique in its location, size, mobility and contaminant characteristics. Therefore, the selection process and eventual implementation of a remedy will be unique and specific for each plume.

In the best of cases, an alternative which is protective of human health and the environment and has widespread acceptance will be identified. This ideal situation would make identification and communication of the remedy selection easy.

In the event that consensus is not reached, the Remedial Project Managers will further investigate stakeholders' preferences and make every attempt to understand the nature of objections and preferences. They will ensure that all the acceptance group's concerns and comments are heard and understood. They will work among themselves to determine if an alternative can be modified or compromises can be incorporated to make an alternative more attractive to the majority of the groups. After this process, the Remedial Project Managers will recommend a course of action. Remedial Project Managers will ensure that the process is diligently implemented with incorporation of public involvement. The RPM's will also keep their respective upper management apprised of the activities and developments in the process.

3.0 HOW THE MATRIX IS INCORPORATED INTO THE SCHEDULE

As plume response simulations are run, and potential response alternatives are identified, updated information will be shared at the public meetings of the stakeholders and other "Acceptance Criteria Groups," as listed in section VII of the matrix. The identification of response alternatives will be worked through the use of Plume Focus Group representatives for each plume, through Technical Review And Evaluation Team and Science Advisory Panel presentations, as well as formalized Process Action Team and Senior Management Board meetings. These meetings provide opportunity for input, concerns and requests for clarification from the public prior to finalizing the assessment of alternatives. The tentative timeline for these public meetings is shown in the schedules contained in Appendix IV.

As the decision point approaches, specific and focused meetings for the community, Process Action Teams and Senior Management Board will be scheduled to present alternatives. There will be a series of joint neighborhood Joint Process Action Team meetings, Posterboard Sessions, and Fact Sheets specifically targeted to provide information and solicit public input in building consensus for the selected response alternatives. The forum, content and delivery of these specialized meetings will be

**PLUME RESPONSE DECISION CRITERIA
AND SCHEDULE
Process Description**

April 24, 1997

coordinated with the Program Implementation Team and will be conducted under the auspices of the Community Involvement Plan objectives.

The intent is to hold two key public meetings for each plume. The first is simply to present the alternatives and initiate community dialogue on preferences. The second meeting is intended to show the public the pros and cons of each alternative using the matrix. The official public comment period will extend approximately 2 weeks beyond this second meeting, allowing an average of 8 weeks for comments on a specific plume.

By the time the decision point arrives, the pros and cons of each alternative considered should be well understood. The date on the schedule for the decision point is when the public affirmation of the selected response alternative is expected and implementation begins.

The schedule for the technical activities leading up to response alternative identification and selection, as well as the public meetings for plumes CS-10, Ashumet Valley, LF-1, and SD-5 South are contained in Appendix IV. Also included at Appendix IV is the Options Implementation Schedule showing estimated time frames between decision points and system start-up.

To keep the program on track, the Air Force has agreed with regulatory agencies that certain enforceable milestones must be met. Appendix V contains a summarized schedule reflecting these enforceable activities for all of the plumes referenced in the *Comprehensive Plume Response Plan*. These schedules are also presented for public comment.

4.0 INCORPORATION AND ENFORCEABILITY

This "Plume Response Decision Criteria and Schedule (Criteria Document) is Appendix VI to the Federal Facilities Agreement (FFA) for the Massachusetts Military Reservation, and as such will be appended to and made part of the FFA, and shall be enforceable thereunder. The Department of the Air Force (USAF) and Environmental Protection Agency (EPA) agree that USAF's commitment to use the evaluation procedure in this Criteria Document shall constitute a "term" or "condition" of the FFA, including but not limited to Sections II, XVII, XX and XXI of the FFA

APPENDIX I
ALTERNATIVE EVALUATION
MATRIX

ALTERNATIVE EVALUATION MATRIX

Definitions

April 24, 1997

EVALUATION CRITERIA	Proposed Alternatives						
	ETR		Recirc Wells		Hybrid		Natural Atten
	Alt A	Alt X	Alt B	Alt X	Alt C	Alt X	
(Alternative Solutions as applicable)							
THRESHOLD CRITERIA							
I. Overall Protection of Human Health and the Environment							
A. Human Health							
1. Are the exposure pathways eliminated, reduced or controlled?							
B. Environment							
1. Are the impacts of response alternative on threatened or endangered species and habitats acceptable?							
2. Are the impacts of response alternative within hydrological and ecological threshold(s)?							
II. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs) as defined in the September 1995 IROD							
PRIMARY BALANCING CRITERIA							
III. Effectiveness and Permanence of Response Alternatives							
A. Effectiveness							
1. Estimated % capture of plume by volume (100% is goal, if technically and economically feasible)							
2. Estimated % contaminant removal by mass							
a. Ethylene Dibromide (EDB)							
b. Volatile Organic Compounds							
c. Semi-volatiles							
d. Inorganics							
3. Impacts on other plume(s)							
B. Impacts associated with uncaptured portion of the plume							
1. Human health risk							
a. Carcinogenic							
b. Non-carcinogenic							
2. Ecological risk							
3. Socio-economic							
4. Water supply							
C. Characteristics of uncaptured portion of plume							
1. Volume							
2. Mass							
3. Persistence (duration)							
4. Surface water impacts							

Note: Nothing in this matrix or its explanation, definitions, or other attachments in and of themselves establishes clean up standards or performance standards or acceptable contaminant levels for MMR response actions.

ALTERNATIVE EVALUATION MATRIX

Definitions

April 24, 1997

EVALUATION CRITERIA	Proposed Alternatives						
	ETR		Recirc Wells		Hybrid		Natural Atten
	Alt A	Alt X	Alt B	Alt X	Alt C	Alt X	
(Alternative Solutions as applicable)							
D. Institutional controls for plume area							
1. Property use restrictions required							
2. Connections to public water supplies							
3. Adequacy of Institutional Controls							
a. Human health							
b. Ecological							
4. Other							
IV. Effectiveness of Treatment Systems							
A. Treatment system efficiency : Does effluent achieve background levels? (Background levels are goal, if technically and economically feasible)							
1. Ethylene Dibromide							
2. Volatile Organic Compounds							
3. Semi-volatiles							
4. Inorganics							
B. Final disposition of treatment system residuals							
C. Risks to workers associated with handling/treating/disposing of residuals							
D. Does response alternative satisfy statutory preference for treatment as principal element							
V. Implementability							
A. Time factors:							
1. Duration to partial system start-up							
2. Duration to system start-up							
3. Estimated duration of system operation							
B. Reliability of technology							
C. Coordination requirements with regulators and other agencies							
D. Property access considerations							
E. Risks associated with construction							
1. Human health							
a. Carcinogenic							
b. Non-carcinogenic							
2. Ecological							
F. Impacts associated with construction							
1. Socio-economic							
2. Environmental							

ALTERNATIVE EVALUATION MATRIX
Definitions

April 24, 1997

EVALUATION CRITERIA	Proposed Alternatives						
	ETR		Recre Wells		Hybrid		Natural Atten
	Alt A	Alt X	Alt B	Alt X	Alt C	Alt X	
(Alternative Solutions as applicable)							
G. Risks associated with operations							
1. Human health							
a. Carcinogenic							
b. Non-carcinogenic							
2. Ecological							
H. Impacts associated with operations							
1. Socio-economic							
2. Environmental							
VI. Cost							
A. Total capital cost							
B. Operating and maintenance cost - annual							
C. Life-cycle cost							
ACCEPTANCE CRITERIA							
VII. Acceptance of response alternative							
A. Public at large							
B. Neighborhood							
C. Process Action Teams							
D. Senior Management Board Selectmen Representatives							
E. Department of Public Health/ATSDR							
F. Natural Resource Trustees							
G. Environmental Protection Agency							
H. Massachusetts Department of Environmental Protection							
I. Department of Defense							

PLUME RESPONSE DECISION CRITERIA

Explanation of Criteria

April 24, 1997

THRESHOLD CRITERIA

I. Overall Protection of Human Health and the Environment

A. Human Health

1. Are exposure pathways eliminated, reduced, or controlled?

- ☒ "Yes" if all exposure pathways are eliminated or significantly reduced and implementation and operation of the action or Response alternative does not create new exposure pathways. Significant reduction means that the health risk associated with any remaining or reduced pathways is expected to fall within acceptable CERCLA ranges.

☐ "No" otherwise.

B. Environment

1. Are the impacts of the response alternative on threatened or endangered species and habitats acceptable?

- ☒ "Yes" if species are absent or impacts are within an acceptable range.

☐ "No" if impacts are unacceptable.

? "Unknown" if species are present and impacts occur but effects cannot be determined.

2. Are the impacts of the response alternative within hydrological and ecological thresholds?

- ☒ Yes

☐ No

II. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs), as established in 1995 Interim Record of Decision (IROD):

- ☒ Yes

☐ "Yes," with Waiver as per CERCLA

☐ No

PRIMARY BALANCING CRITERIA

III. Effectiveness and Permanence of Response Alternatives

A. Effectiveness

1. Estimated % Capture of Plume, calculated by volume (100% is goal, if technically and economically feasible):

- ☒ 100 % capture

☐ 95% - 100 % capture

☐ Less than 95 % capture

Note: For natural attenuation the capture efficiency is assumed to be 0%.

PLUME RESPONSE DECISION CRITERIA

Explanation of Criteria

April 24, 1997

2. Estimated % Contaminant Removal by Mass: Mass removal percentages will be calculated for: (a) EDB, (b) VOCs, (c) semi-volatiles, and (d) inorganics. Clean up to background if technically and economically feasible is assumed to be 100% removal and is expressed as a range as follows:

- ☒ 100 % removal to background levels if technically and economically feasible
- ☐ 90% - 100 % removal
- ☐ Less than 90 % removal

3. Impacts on Other Plume(s):

- ☒ "Acceptable" if no other plumes are affected, or there are no unacceptable impacts on existing or planned capture and treatment systems.
- ☐ "Unacceptable" if otherwise.

B. Impacts associated with uncaptured portion of plume:

1. Human Health Risk: Cumulative human health risks would be estimated using the Baseline Risk Assessment, and any new updated data.

a. Carcinogenic:

- ☒ Less than 10^{-6}
- ☐ Within 10^{-6} to 10^{-5}
- ☐ Within 10^{-5} to 10^{-4}
- ☐ Above 10^{-4}

b. Non-Carcinogenic:

- ☒ Below Hazard Index of 1.0
- ☐ Hazard Index of 1.0 or Higher

2. Ecological Risk: Would be estimated using the Baseline Risk Assessment and updated data.

- ☒ Below Hazard Index of 1.0
- ☐ Hazard Index of 1.0 or Higher

3. Socio-Economic: Qualitatively considers potential impacts on commercial and residential interests, recreational areas and historical and archeological sites.

- ☒ Low impact
- ☐ Moderate impact
- ☐ High impact

4. Water Supply: Qualitatively considers impact on usability of groundwater supply by residents, business, industry. Greater impact consideration given to existing wells or current groundwater usage (immediacy of use/need).

- ☒ Low impact
- ☐ Moderate impact

PLUME RESPONSE DECISION CRITERIA

Explanation of Criteria

April 24, 1997

- ☐ High impact

C. Characteristics of uncaptured portion of plume

1. Volume: The uncaptured portion of the plume would be identified and delineated. The volume will be expressed as a percentage of total plume volume. This value would be computed for the total uncaptured portion of the plume but not for specific contaminants.

- ☒ 0 % uncaptured
- ☐ 0 % - 5 % uncaptured
- ☐ More than 5 % uncaptured

2. Mass: The uncaptured portion of the plume would be identified and delineated. Mass will be expressed as a percentage of total plume mass.

- ☒ 0 % uncaptured
- ☐ 0 % - 5 % uncaptured
- ☐ More than 5 % uncaptured

3. Persistence (duration): This value, based on modeling predictions would be the time (expressed as a range of years) required for the entire uncaptured plume to travel to its discharge point or for concentrations within the plume to decrease to values that are no longer threats to human health or the ecology, whichever is longer.

- ☒ Less than 10 years
- ☐ 10 to 20 years
- ☐ Greater than 20 years

4. Surface Water Impacts:

- ☒ "No" if the uncaptured plume attenuates to concentration values that are no longer threats to human health or the ecology before reaching a fresh or marine surface water discharge point.
- ☐ "Yes" otherwise.

D. Institutional controls of the plume area (captured and uncaptured):

1. Property use restrictions required:

- ☒ No property use restrictions are required to eliminate exposure pathways under any potential future land use.
- ☐ Some restrictions are required.
- ☐ Many restrictions are required.

2. Connections to public water supplies: Refers to whether or not a connection will be necessary now or in the future.

- ☒ "None" if the current or future path of the plume is currently served by public water supplies.
- ☐ "Some" if 1-25 public water supply connections must be extended.

PLUME RESPONSE DECISION CRITERIA

Explanation of Criteria

April 24, 1997

☐ "Many" if more than 25 connections must be extended.

3. Adequacy of Institutional Controls:

a. Human Health:

- ☒ "Adequate" if federal, state, or local regulations exist that provide the necessary control(s) and corresponding inspection and enforcement functions also exist and these controls are commonly implemented and historically effective.
- ☐ "Questionable" if federal, state, or local regulations exist that provide the necessary control(s) and corresponding inspection and enforcement functions also exist but these controls are not commonly implemented or exercised or they have not been historically effective.
- ☐ "Inadequate" if federal, state, or local regulations which provide the necessary control(s) do not exist or if corresponding inspection and enforcement functions do not exist.

b. Ecological:

- ☒ "Yes" if federal, state, or local regulations exist that provide the necessary control(s) and corresponding inspection and enforcement functions also exist.
- ☐ "No" if otherwise.

4. Other: To be determined as specific evaluation criteria are developed.

IV. Effectiveness of Treatment System.

A. Treatment System Efficiency : Does effluent achieve background levels? (Background levels are goal, if technically and economically feasible)

1. Ethylene Dibromide

- ☒ Yes
- ☐ No

2. Volatile Organic Compounds

- ☒ Yes
- ☐ No

3. Semi-Volatiles

- ☒ Yes
- ☐ No

4. Inorganics

- ☒ Yes
- ☐ No

B. Final Disposition of treatment system residuals

- ☒ Destruction
- ☐ Mixed (combination of destruction and transfer)

PLUME RESPONSE DECISION CRITERIA

Explanation of Criteria

April 24, 1997

- ☐ Transfer

C. Risks to workers associated with handling/treating/disposing of residuals:

- ☒ "Low" if volume and/or nature of residual contaminants will not present operational uncertainties and risks.
- ☒ "Moderate" if volume and/or nature of residual contaminants will be of concern but manageable.
- ☐ "High" otherwise.

D. Does response alternative satisfy statutory preference for treatment as principal element:

- ☒ Yes
- ☐ No

V. Implementability

A. Time factors:

1. Duration to partial system start-up: The estimated time frame from decision point until startup for a significant portion of the overall system, ("Significant" means that higher concentration portions of the plume are being addressed or that containment of at least a quarter of the plume volume is effected.)

- ☒ Less than 12 months
- ☒ 12 to 24 months
- ☐ Greater than 24 months

2. Duration from decision point to system start-up.

- ☒ Less than 12 months
- ☒ 12 to 24 months
- ☐ Greater than 24 months

3. Estimated duration of system operation: The estimated duration that the proposed plume response alternative will have to operate.

- ☒ Less than 10 years
- ☒ 10 - 20 years
- ☐ Greater than 20 years

B. Reliability of Technology: Reliability will be re-evaluated after completion of pilot tests.

- ☒ "High" when operating systems which use accepted, proven technologies. Activated carbon, air stripping, vacuum extraction and ETR, would be scored high.
- ☒ "Moderate" when operating systems which use developing or new technologies. Synthetic carbon filtration, cavitation/oxidation, recirculating well technology and *in situ* bioremediation would be scored moderate.

PLUME RESPONSE DECISION CRITERIA
Explanation of Criteria

April 24, 1997

-
- ☐ "Low" when operating systems that use emerging technologies such as reactive walls that have greater uncertainty in effectiveness.
 - C. Coordination Requirements with Regulators and Other Agencies:
 - Response alternatives which require a minimal degree of regulatory and agency involvement to obtain approval will be scored High.
 - ☐ Response alternatives requiring performance tests or elaborate treatability testing or extensive permitting will be scored low.
 - D. Property Access Considerations:
 - "High" if treatment systems are constructed entirely on MMR or available public lands.
 - ☐ "Moderate" for lands with 'likely' access.
 - ☐ "Low" for private properties with 'questionable' access.
 - E. Risks Associated with Construction
 - 1. Human Health: Carcinogenic risks and hazard indexes are revised to reflect the impacts of construction activities on exposure pathways and construction workers are added as receptors. The exposure time is limited to the duration of the construction activity and only current land uses are considered. Cumulative human health risks would be estimated using the Baseline Risk Assessment, and any new updated data .
 - a. Carcinogenic:
 - Less than 10^{-6}
 - ☐ Within 10^{-6} to 10^{-5}
 - ☐ Within 10^{-5} to 10^{-4}
 - ☐ Above 10^{-4}
 - b. Non-Carcinogenic:
 - Below Hazard Index of 1.0
 - ☐ Hazard Index of 1.0 or Higher
 - 2. Ecological: Would be estimated using the Baseline Risk Assessment and updated data. Chemical-specific ecological hazard indexes would be re-calculated as needed to reflect construction impacts on exposure pathways or contaminant concentrations.
 - Below Hazard Index of 1.0
 - ☐ Hazard Index of 1.0 or Higher
 - F. Impacts Associated with Construction:
 - 1. Socio-Economic: Qualitatively considers potential impacts on commercial and residential interests, recreational areas and historical and archeological sites.
 - Low impact
 - ☐ Moderate impact

PLUME RESPONSE DECISION CRITERIA

Explanation of Criteria

April 24, 1997

- ☐ High impact

2. Environmental:

- ☒ "Low" if there are no significant adverse impacts on ecological systems; minimal disturbance of endangered species, elimination of habitat, activities in wetlands or any protective setback from wetlands or water bodies, drawdowns of surface water bodies or change in chemical composition of surface water bodies, and deforestation of old growth trees.

- ☐ "High" if there are significant adverse impacts on ecological systems.

G. Risks associated with operation:

1. Human Health: Carcinogenic risks and hazard indexes are revised to reflect the impacts of operation exposure pathways and workers and community are added as receptors. Cumulative human health risks would be estimated using the Baseline Risk Assessment, and any new updated data.

a. Carcinogenic:

- ☒ Less than 10^{-6}
- ☐ Within 10^{-6} to 10^{-5}
- ☐ Within 10^{-5} to 10^{-4}
- ☐ Above 10^{-4}

b. Non-Carcinogenic:

- ☒ Below Hazard Index of 1.0
- ☐ Hazard Index of 1.0 or Higher

2. Ecological Risk: Would be estimated using the Baseline Risk Assessment and updated data. Chemical-specific ecological hazard indexes would be re-calculated as needed to reflect operation impacts on exposure pathways or contaminant concentrations.

- ☒ Below Hazard Index of 1.0
- ☐ Hazard Index of 1.0 or Higher

H. Impacts associated with operation

1. Socio-Economic: Qualitatively considers potential impacts on commercial and residential interests, recreational areas and historical and archeological sites.

- ☒ Low impact
- ☐ Moderate impact
- ☐ High impact

PLUME RESPONSE DECISION CRITERIA
Explanation of Criteria

April 24, 1997

2. Environmental

- "Low" if there are no significant adverse impacts on ecological systems; minimal disturbance of endangered species, elimination of habitat, activities in wetlands or any protective setback from wetlands or water bodies, drawdowns of surface water bodies or change in chemical composition of surface water bodies, and deforestation of old growth trees.
- "High" if there are significant adverse impacts on ecological systems.

VI. Cost (Present Value in thousands of dollars)

- A. Total Capital Cost
- B. Operating and maintenance Cost - annual
- C. Life-cycle cost (Capital cost and O & M cost)

ACCEPTANCE CRITERIA

VII. Acceptance of Response alternative

- Preferred
 - Acceptable
 - Unacceptable
- A. Public at large
 - B. Neighborhood Groups
Public opinion will be qualitatively assessed by the Program Implementation Team (PIT) and the Remediation Program Managers (RPMs) by assessing the sentiment of public meetings as well as by analyzing the comments received on plans at public meetings.
 - C. Process Action Teams
 - D. SMB Selectman representatives from the four affected Towns (Mashpee, Bourne, Falmouth and Sandwich): "Yes" or "No" responses developed through a process established by the participants.
 - E. MA Department of Public Health and Agency for Toxic Substance and Disease Registry.
 - F. Natural Resource Trustees. These currently include: Air Force, National Oceanic and Atmospheric Administration, Commonwealth of Massachusetts, Army, Department of the Interior and Veterans Administration.
 - G. Environmental Protection Agency
 - H. Commonwealth of Massachusetts Department of Environmental Protection
 - I. Department of Defense

APPENDIX III DEFINITIONS

PLUME RESPONSE DECISION CRITERIA

Definitions

April 24, 1997

ARAR (Applicable or Relevant and Appropriate Requirements). Federal or State laws and regulations that must be met during the implementation and at the completion of the remedy.

Background. Levels of chemicals which exist in the environment in the absence of contamination resulting from the disposal site of concern.

Capture. Actions taken to abate, contain or recover a contaminant by a remedy.

Carcinogenic Risk. For human health risk, carcinogenic risk is a measure of the health risks for contaminants of concerns which are known or suspected to cause cancer.

Cleanup. Actions for removing contaminants from the environment.

Containment. Actions taken to prevent further migration of a contaminant plume.

Decision Point. The time at which the plume response alternative is selected.

Decision Criteria. The factors evaluated and compared in the Plume Response Alternative Evaluation Matrix.

ETR (Extraction/Treatment/Reinjection). A system which extracts groundwater, treats it to reduce or eliminate contaminants and reinjects the treated water into the aquifer.

Feasibility of achieving background. Capability of a response alternative achieving background levels of contaminant

a. Technological Not feasible if:

- The existing technologies or modifications cannot remediate to a level of no significant risk, or to levels which approach or achieve background; or
- The reliability of the identified alternative has not been sufficiently proven and a substantial uncertainty exists as to whether it will effectively reduce risk; or
- Alternative does not or cannot be modified to meet other regulatory requirements.

b. Economic

The benefits of implementing an alternative and reducing the concentrations of contaminants in the environment to levels which approach or achieve background justifies related costs unless:

- Incremental cost for alternative is substantial and disproportional to the benefit of risk reduction, environmental restoration and monetary and non-monetary values; or
- The risk of harm to health/safety/public welfare/environment by the alternative cannot be adequately controlled.

Feasibility of 100% Capture

a. Technological

Not technically feasible if:

PLUME RESPONSE DECISION CRITERIA

Definitions

April 24, 1997

- The existing technologies or modifications cannot attain 100% capture;
- The reliability of the identified alternative has not been sufficiently proven and a substantial uncertainty exists as to whether it can attain 100% capture; or
- Alternative does not or cannot be modified to meet other regulatory requirements.

b. Economic

The benefits of implementing an alternative and attaining 100% capture justifies related costs unless:

- Incremental cost for alternative is substantial and disproportional to the benefits;
- The risk of harm to health/safety/public welfare/environment by the alternative cannot be adequately controlled.

Hazard Indices For human health risk, hazard index is a measure of the health risks for contaminants of concerns which are not known or suspected to cause cancer. For ecological risks, hazard index is a measure of the risks for contaminants of concern.

Hybrid A system made up of a combination of different technologies.

MCLs (Maximum Contaminant Levels) The maximum concentration of a given contaminant allowed in drinking water under State and Federal regulations.

MRG - Management Review Group. This group consisting of senior management representatives from Air Force Center For Environmental Excellence (AFCEE), Executive Office of Environmental Affairs (EOEA) the Massachusetts Department of Environmental Protection (DEP), and Environmental Protection Agency (EPA), the Air Staff (AF/ILEVR), The Secretariat (SAF/MIQ) and the four Senior Management Board selectmen make decisions on policy and management issues at MMR's clean-up program.

Natural Attenuation The process by which a compound is reduced in concentration over time by natural processes.

No Significant Risk A level of control of each identified substance of concern at a site or in the surrounding environment that no such substance of concern shall present a significant risk of harm to health, safety, public welfare or the environment during any foreseeable period of time.

Non-Carcinogenic Risk see Hazard Index

PATs -Process Action Teams. This team consists of four sub-groups which provide input on policy, management and technical issues concerning the clean-up at MMR. The following teams make up the PATs.

- **ITT - Innovative Technologies Team.** Provides input on use and development of innovative environmental technologies at MMR.

PLUME RESPONSE DECISION CRITERIA

Definitions

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- **LRWS -Long Range Water Supply Team** - Provide input on technical issues involving Regional water supply development and supply in the four adjacent towns water districts, as it relates to clean-up efforts at MMR.
- **PCT - Plume Containment Team.** Provides input on policy and management and technical issues involving numerous plume response activities.
- **PIT -Program Implementation Team** - Provides input on community outreach and public involvement efforts.

Pilot Test. Demonstrations of technologies/systems to evaluate performance under field conditions. The results are used to develop alternatives and design full scale treatment systems.

Plume. A body of groundwater containing contaminants exceeding Maximum Contamination Levels (MCLs), as defined by multiple samples from multiple wells. In the absence of MCLs, a risk-based level will be established.

Recirculating Well. A Process for capturing, treating and releasing groundwater within the same well. This process is not expected to adversely impact the water table.

Plume Response Alternative. A specific configuration of treatment system(s) to be compared and evaluated.

Residuals. The hazardous and/or non-hazardous byproducts of a treatment process which require disposal.

RPMs (Remedial Program Managers). The RPM team consists of the Program Managers appointed by Massachusetts Department of Environmental Protection (DEP), Environmental Protection Agency (EPA), and Air Force Center For Environmental Excellence (AFCEE). This team provides critical day to day input, direction and decisions on schedule, enforceable milestones and technical progress and overall operations of the project.

SMB (Senior Management Board). This group consist of the selectmen of the four adjacent towns (Bourne, Mashpee, Falmouth and Sandwich), Coast Guard, MA National Guard, Department of Environmental Protection (DEP), Environmental Protection Agency (EPA), and Department of Public Health (DPH). Their current tasking is to provide input on policy and management issues involving plume containment actions of public concern and review the work of all other citizen involvement teams, including the PAT's.

Treatment. A method, technique or process designed to change the physical, chemical or biological character or composition of contaminated groundwater.

TRET (Technical Review and Evaluation Team). This group of hydrogeological and ecological experts contain scientist from Massachusetts Department of Environmental Protection (DEP), Environmental Protection Agency (EPA), HAZWRAP/Oakridge National Laboratories, Waste Policy Institute, AFCEE, Cape Cod Commission, United States Geological Survey (USGS), University of Utah, Kansas State University, the Science Advisory Panel, Woods Hole Oceanic Institution and other local

PLUME RESPONSE DECISION CRITERIA
Definitions

April 24, 1997

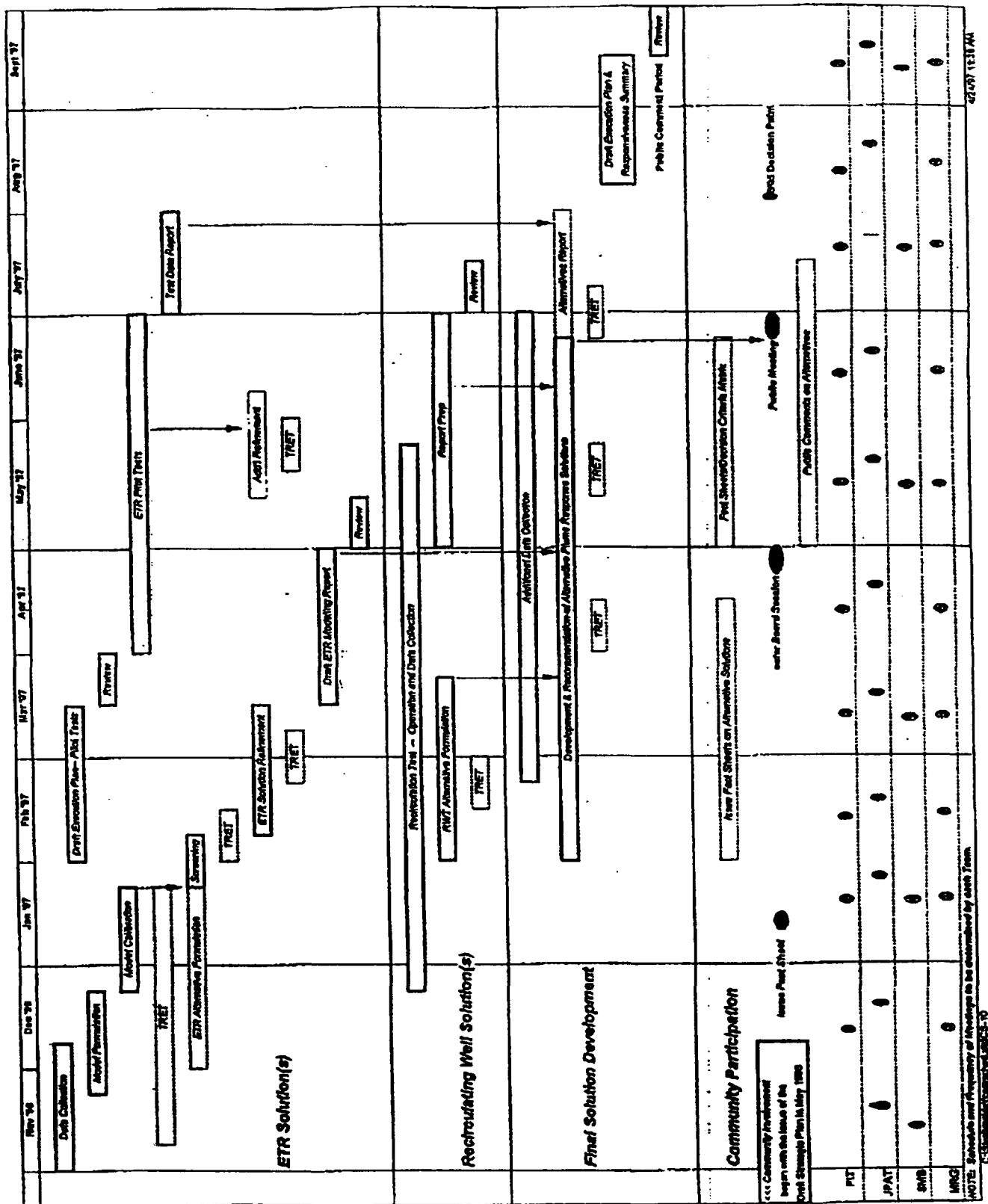
scientists. The TRETs tasking is to advise the RPMs, AFCEE and its contractors on technical and scientific issues of concern.

**APPENDIX IV
ALTERNATIVE DEVELOPMENT AND SELECTION
PROCESS TIMELINES
AND
OPTIONS IMPLEMENTATION TIMELINES**

- CS-10 Plume
- Ashumet Valley Plume
- LF-1 Plume
- SD-5 South Plume

"SUPERSEDED"

MNR Plume Response Program
ALTERNATIVE DEVELOPMENT AND SELECTION PROCESS
CS-10 Plume



" SUPERSEDED "

MMR Plus Response Program



"SUPERSEDED"

"SUPERSEDED"

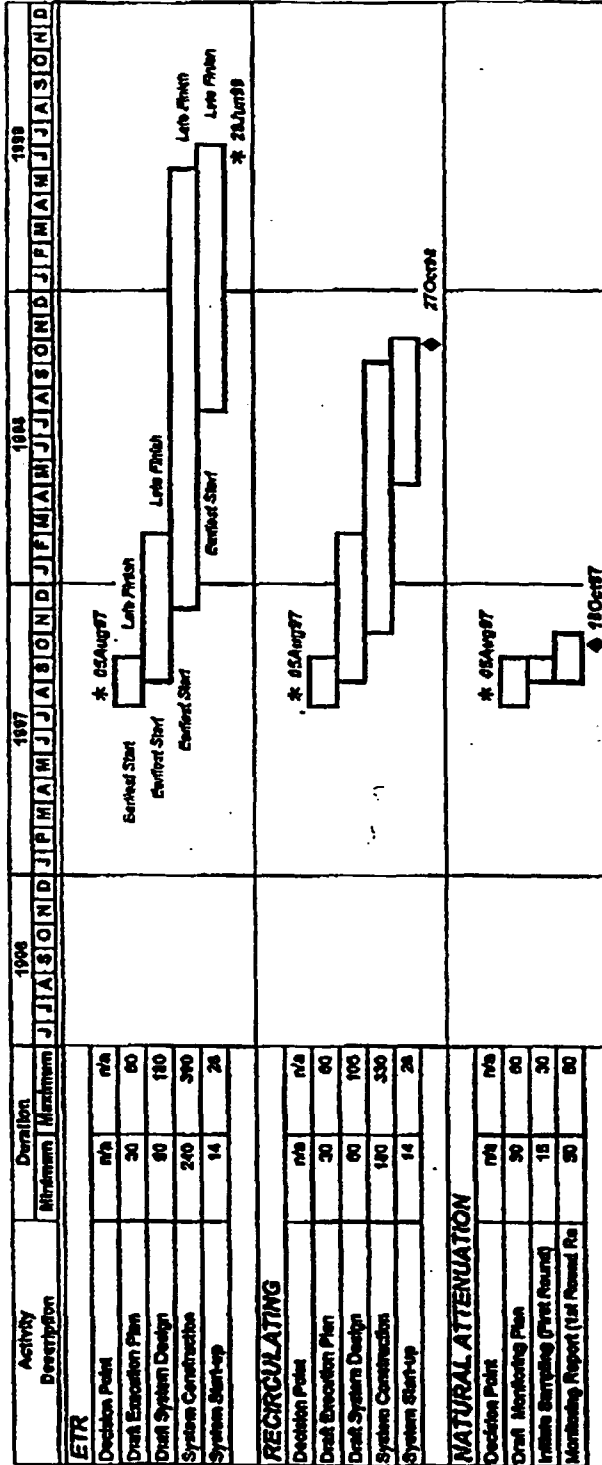
Subject	Exam	Plan	Year	Rate
Decision	Plans	APP	APP	42

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"SUPERSEDED"

CS-10 PLUME OPTIONS IMPLEMENTATION SCHEDULE



Footnote:

A full Implementation Schedule will be included in the Full System Draft Execution Plan which will be submitted 4 to 6 weeks after the decision point. "System Start-up" milestone is driven by the ETR system (pumped) decision design & construction schedule.

Legend:

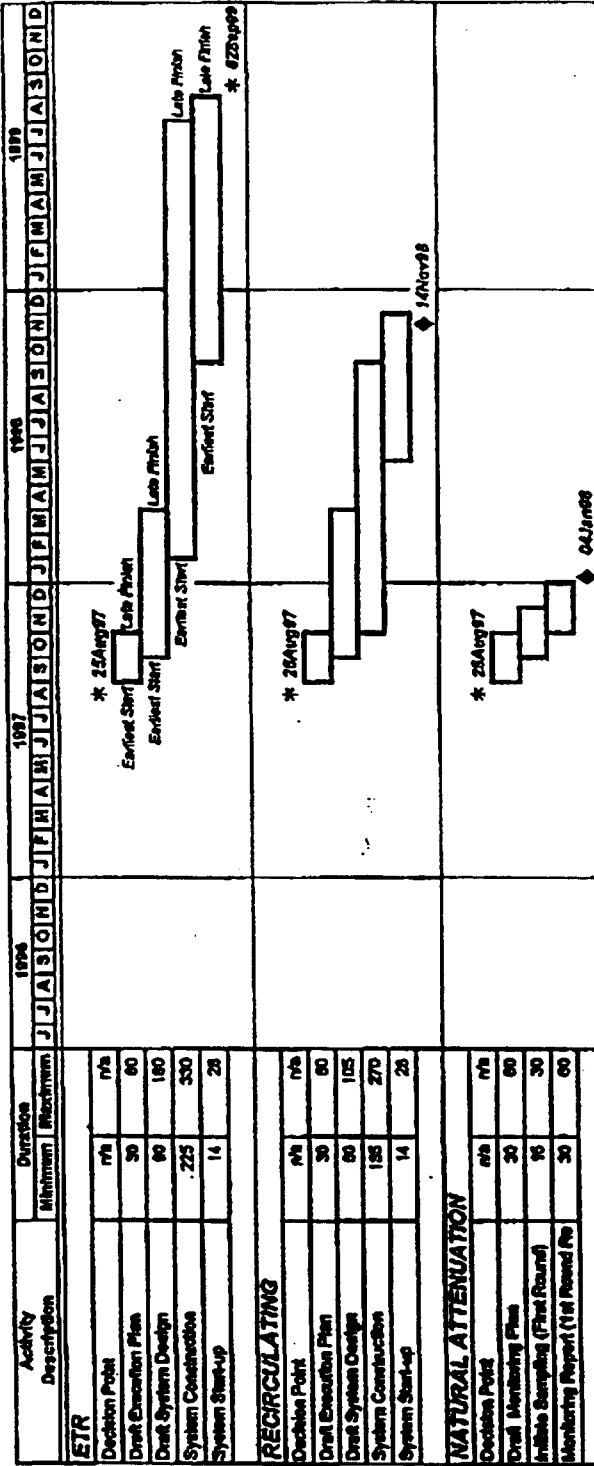
- * FPA Milestone Date, FPA ETR or Combined Technology system is selected action.
- ◆ FPA Milestone Date, if technology (i.e. recirculating wells or natural attenuation) is sole action selected.

The following assumptions were used to construct enforceable milestones:

1. Size of plume
 2. Types and levels of contaminants
 3. Complexity of system
 4. Access availability
 5. Time of year for construction
 6. Size of monitoring/sampling program
 7. Agreed-upon decision criteria as of February 1997
- A change in any of the foregoing assumptions may be cause for adjustment of the enforceable milestones, but shall not automatically be grounds for any such extension.

"SUPERSEDED"

MMR Plume Response Program **Ashmet Valley PLUME OPTIONS** **IMPLEMENTATION SCHEDULE**



Footnote:

A full Implementation Schedule will be included in the Full System Draft Execution Plan which will be submitted 4 to 8 weeks after the decision point. "System Start-up" milestones are driven by the ETR system (except decision design & construction schedule).

Legend:

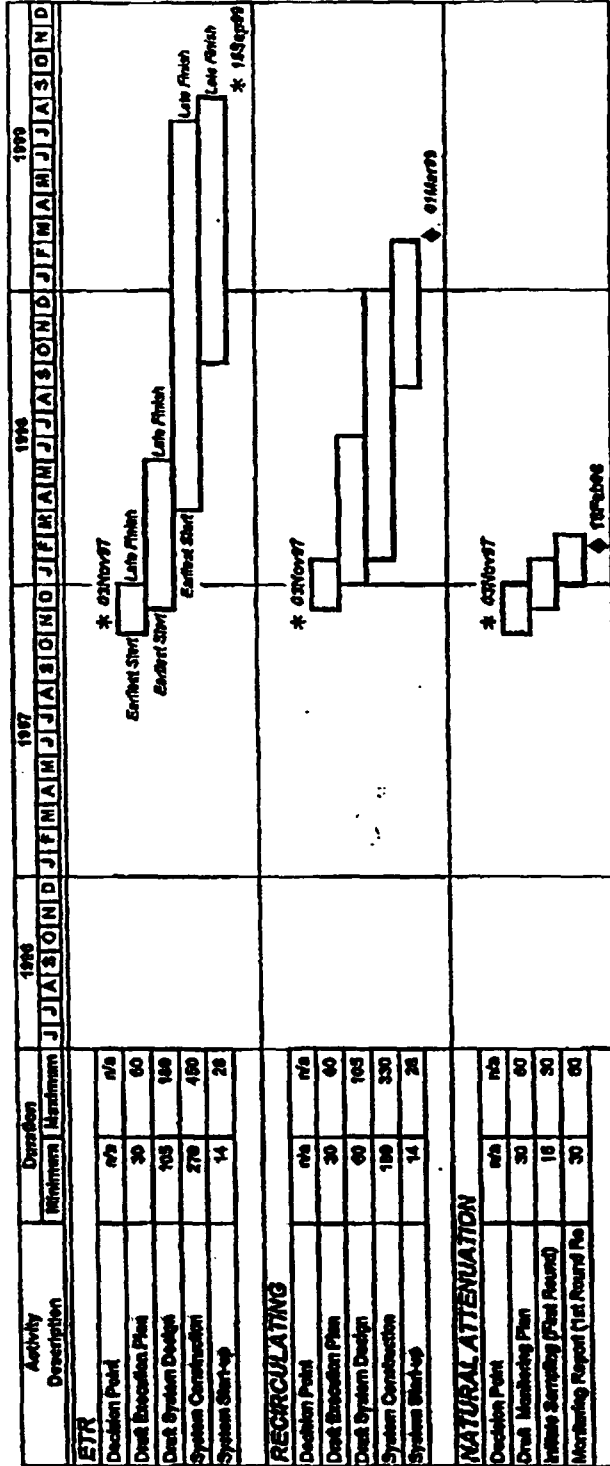
- * FFA Milestone Date, if All ETR or Combined-Technology system is selected action.
- ◆ FFA Milestone Date, if technology (i.e. recirculating wells or natural attenuation) is sole action selected.

The following assumptions were used to construct enforceable milestones:

1. Size of plume
 2. Types and levels of contaminants
 3. Complexity of system
 4. Access availability
 5. Time of year for construction
 6. Size of monitoring/sampling program
 7. Agreed-upon decision criteria as of February 1997
- A change in any of the foregoing assumptions may be cause for extension of the enforceable milestones, but shall not automatically be grounds for any such extension.

" SUPERSEDED "

LE-1 PLUME OPTIONS IMPLEMENTATION SCHEDULE



Footnotes:

A full implementation schedule will be included in the full System Draft Execution Plan which will be submitted 4 to 8 weeks after the decision point. "System Start-up" milestones is driven by the ETR system (except duration design & construction schedule).

Legend:

- * FFA Milestone Date, if All ETR or Combined-Technology system is selected action.
- ◆ FFA Milestone Date, if technology (i.e. recharging wells or natural attenuation) is sole action selected.

The following assumptions were used to construct enforceable milestones:

1. Size of plume
 2. Type and levels of contaminants
 3. Complexity of system
 4. Access availability
 5. Time of year for construction
 6. Size of monitoring/sampling program
 7. Agreed-upon decision criteria as of February 1997
- A change in any of the foregoing assumptions may be cause for extension of the enforceable milestones, but shall not automatically be grounds for any such extension.

" SUPERSEDED "

NEW STUNTA RESPONSE PROGRAM

The following assumptions were used to construct enforceable mitigation:

A full implementation Schedule will be included in the Full System Draft Execution Plan which will be submitted 4 to 8 weeks after the decision point. "System Start-up" milestones is shown by the ETR system forecast duration design & construction schedule).

* FFA Memberships Data, *FFA ETR* or Combined-Technology system is selected action.

◆ FFA Milestone Data, if technology (i.e. restructuring walls or natural attenuation) is both action selected.

1. Size of plume
2. Types and levels of contaminants
3. Complexity of system
4. Access availability
5. Time of year for construction
6. Size of monitoring/sampling program
7. Approved decision criteria as to when to stop

A change in any of the foregoing assumptions may be cause for extension of the enforceable milestone, but shall not automatically be grounds for any such extension.

but shall not automatically be grounds for any such extension.

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APPENDIX V
FFA MILESTONES SUMMARY
(Plume Response Enforceable Schedule Summary)

" SUPERSEDED "

MMR Plume Response Program FFA MILESTONES

SUMMARY

Plume	ID	Description	Activity																															
			1996				1997				1998																							
SD-5 South Plume			J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	
SD-5 South Redistributing Well Pilot Test																																		
AU0512		Subnet Draft Radiic Execution Plan																																
AU2522		Complete First 10 Wells																																
AU2550		System Startup																																
AU3512		Subnet Draft Radiic System Evaluation Report																																
SD-5 South Pilot ETR																																		
AU0512		Subnet Draft Pilot ETR Execution Plans																																
AU2512		Completion of 2 Pilot ETR Extraction Wells																																
AU3502		Subnet Pilot ETR Test Data Report																																
AU0537		Subnet Draft Full-Scale Execution Plan																																
AU0901		System start-up																																
ES-28 EDR R/F/S																																		
AU0532		Subnet Draft R/F/S Work Plan																																
AU0512		Subnet Draft Technical Decision Memo																																
AU3536		Subnet Draft Site Characterization Report																																
CS-4 Extraction Fence Evaluation																																		
AB-ES		Subnet Draft Technical Memo																																
Western Area Farm Monitoring																																		
AU0512		Subnet Draft Monitoring Plan																																
AU3002		Initial Sampling																																
		Subnet Annual Evaluation Report																																
Bradwood Monitoring																																		
AP0512		Subnet Draft Monitoring Plan																																
AP3006		Initial Sampling																																
		Subnet Annual Evaluation Report																																
Inorganic Investigation																																		
AS0512		Subnet EvalData/Draft Work Plan																																
AS3012		Commence Sampling/Analysis Inorganic																																
AS3512		Subnet Draft Inorganic Report																																

Footnotes:

1. A Full Implementation Schedule will be included in the Full System Draft Execution Plan which will be submitted 4 to 8 weeks after the decision point. "System start-up" milestones is driven by the ETR system forecast duration design & construction schedule.
2. Dates indicated with an asterisk (*) have been revised to reflect property access delays and/or changed site conditions.
3. "Phase II System Startup" date will be developed in March 1997.
4. Date revised to reflect weather and equipment delays.
5. Annual Evaluation Report submittal date will be developed in February 1997.

The following assumptions were used to construct enforceable milestones:

1. Size of Plume
 2. Types and levels of contaminants
 3. Complexity of system
 4. Access availability
 5. Time of year for construction
 6. Size of monitoring/sampling program
 7. Agreed-upon decision criteria as of February 1997
- A change in any of the foregoing assumptions may be cause for extension of the enforceable milestones, but shall not automatically be grounds for any such extension.

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UUR Plume Response Program FEA MILESTONES

SUMMARY

Activity		1998												1997												1998												1999												
Plume	ID	Description	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D					
SO-3 North Containment System																																																		
AC2102	AC0514	Submitt Draft Remedial System Design																																																
	AC1014	Complete Foundation & 6 Wells																																																
	AC2350	System Startup																																																
ES-12 Containment System																																																		
AD2102	AD0512	Submitt Draft Remedial System Design																																																
	AD1014	Complete Foundation & 6 Wells																																																
	AD2350	Phase II System Startup																																																
CS-10 Plume																																																		
AF0512	AF0512	Submitt Draft Remedial System Design																																																
	AF2522	Complete First 10 Wells																																																
	AF2530	System Startup																																																
AF3512	AF3512	Submitt Draft Remedial System Design																																																
	AF3512	Complete First 10 Wells																																																
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CS-10 Plume																																																		
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Ashumet Valley Plume																																																		
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MMR Plume Response Program
FFA MILESTONES
SUMMARY

(Revised 24-Apr-97)

Solely because of the unique characteristics of the Massachusetts Military Reservation site and its environmental remediation history and in the full expectation that the complete dispute resolution procedures set forth in the Model Provisions for CERCLA Federal Facility Agreements with the Department of Defense dated June 17, 1988 will continue to apply to other FFAs negotiated or to be negotiated in connection with other Department of Defense facilities, the Parties agree to abide by the following dispute resolution procedures at MMR with respect to disputes over whether enforceable milestones have been missed in the conduct of response actions at MMR. In connection solely with such disputes, the Parties agree that the dispute resolution procedures of Section XIII of the FFA shall not apply. Instead, once the EPA has notified the Air Force that EPA believes that the Air Force has missed a milestone under this enforceable schedule and the Air Force has invoked dispute resolution in accordance with paragraph 21.2 of Section XXI of the FFA, the Parties will submit the dispute within one working day to the Regional Administrator of EPA-New England and Deputy Assistant Secretary of the Air Force for Environmental Safety and Occupational Health. They will confer and exert their best efforts to resolve the dispute and issue a unanimous written decision signed by the Air Force and EPA. If unanimous resolution of the dispute is not reached within fourteen (14) days of such submittal, then the dispute will immediately be elevated to EPA's Administrator for resolution within 21 days of the expiration of the 14-day period.

This paragraph shall apply only to disputes at MMR specifically set forth in this paragraph and the Parties anticipate that this paragraph shall not apply as precedent for other FFAs at DOD facilities.

"
SUPERSEDED"
"

APPENDIX VII

**AGREEMENT REMOVING U.S. COAST GUARD AS A PARTY
PURSUANT TO AMENDMENT NO. 3**

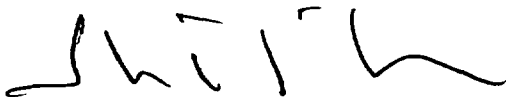
AMENDMENT NO. 3 TO FEDERAL FACILITY AGREEMENT

Pursuant to Section XXVIII of the Federal Facility Agreement (FFA) for the Massachusetts Military Reservation (MMR) Superfund Site signed on July 17, 1991 and subsequently amended, the U.S. Environmental Protection Agency, Region I, the U.S. Department of the Air Force, the U.S. National Guard Bureau, and the U.S. Coast Guard (collectively, the Parties) hereby amend the FFA to remove the U.S. Coast Guard as a Party to the FFA; provided however, that (i) such removal in no way affects the obligations of the U.S. Coast Guard under the terms of the "United States Coast Guard and United States National Guard Bureau Memorandum of Agreement for the Massachusetts Military Reservation, Cape Cod, Massachusetts," dated February 6, 1995; and (ii) the U.S. Environmental Protection Agency reserves its rights to enforce against the U.S. Coast Guard under all applicable environmental laws.

The Parties agree that as provided in FFA Section 28.1, this Amendment will become effective on the third business day following the date on which the last Party to sign the Amendment sends its notification of signing to the other Parties. A fact sheet summarizing this Amendment will be prepared by the U.S. Department of the Air Force (with review and comment by the U.S. Coast Guard, the U.S. Environmental Protection Agency and the Commonwealth of Massachusetts) and published by the U.S. Department of the Air Force in two (2) major local newspapers of **general** circulation. The U.S. Department of the Air Force shall place a copy of this Amendment in the MMR Administrative Record.

The undersigned representative of the U.S. Environmental Protection Agency certifies that he/she is fully authorized to consent to the terms and conditions of this Amendment No. 3 to the MMR Federal Facility Agreement and to legally bind such Party hereto.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

BY: 

John P. DeVillars
Regional Administrator
Environmental Protection Agency
Region I

12/11/89
DATE

The undersigned representative of the U.S. National Guard Bureau certifies that he/she is fully authorized to consent to the terms and conditions of this Amendment No. 3 to the MMR Federal Facility Agreement and to legally bind such Party hereto.

UNITED STATES DEPARTMENT OF DEFENSE, NATIONAL GUARD BUREAU

BY: 

RUSSELL C. DAVIS
Lieutenant General, USAF
Chief, National Guard Bureau


DATE

The undersigned representative of the U.S. Department of the Air Force certifies that he/she is fully authorized to consent to the terms and conditions of this Amendment No. 3 to the MMR Federal Facility Agreement and to legally bind such Party hereto.

UNITED STATES DEPARTMENT OF THE AIR FORCE

BY: TAD DeLore
Thomas W. L. McCall, Jr.
Deputy Assistant Secretary of
the Air Force (Environment,
Safety and Occupational Health)

11 Feb 2000
DATE

The undersigned representative of the U.S. Coast Guard certifies that he/she is fully authorized to consent to the terms and conditions of this Amendment No. 3 to the MMR Federal Facility Agreement and to legally bind such Party hereto.

UNITED STATES COAST GUARD

BY: R. F. Silva
RADM R. F. Silva
Assistant Commandant for Systems
U.S. Coast Guard

12/21/99
DATE

APPENDIX VIII

AMENDMENT NO. 4 ADDING RCRA SECTION 7003 TO THE AGREEMENT

AMENDMENT NO. 4 TO FEDERAL FACILITY AGREEMENT


Pursuant to Section XXVIII of the Federal Facility Agreement (FFA) for the Massachusetts Military Reservation (MMR) Superfund Site signed on July 17, 1991 and subsequently amended, the U.S. Environmental Protection Agency, Region I, the U.S. Department of the Air Force, and the U.S. National Guard Bureau (collectively, the Parties) hereby amend the FFA as follows. The Parties agree to add Section 7003 of the Resource Conservation and Recovery Act to the FFA in order to address those sites caused solely by petroleum releases which fall within the scope of the CERCLA "petroleum exclusion" described in the last sentence of CERCLA section 101(14) and to hereby reissue and re-execute the FFA as so amended. It is further agreed that upon its effective date, the re-executed FFA shall supercede all previous versions of the FFA and shall be fully enforceable by the Parties.

The Parties agree that as provided in FFA Section 28.1, this Amendment and the re-executed FFA will become effective on the third business day following the date on which the last Party to sign the Amendment sends its notification of signing to the other Parties. A fact sheet summarizing this Amendment and the changes made to the FFA will be prepared by the U.S. Department of the Air Force (with review and comment by the U.S. Environmental Protection Agency and the Commonwealth of Massachusetts) and published by the U.S. Department of the Air Force in two (2) major local newspapers of general circulation. Such fact sheet shall further notify the public that a copy of the re-executed FFA can be obtained from the MMR Installation Restoration Program Office upon request. The U.S. Department of the Air Force shall place a copy of this Amendment and the re-executed FFA in the MMR Administrative Record.

The undersigned representative of the U.S. Environmental Protection Agency certifies that he/she is fully authorized to consent to the terms and conditions of this Amendment No. 4 to the MMR Federal Facility Agreement and to legally bind such Party hereto.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

BY:



John P. DeVillars
Regional Administrator
Environmental Protection Agency
Region I

12/11/99
DATE

The undersigned representative of the National Guard Bureau certifies that he/she is fully authorized to consent to the terms and conditions of this Agreement No. 4 to the MMR Federal Facility Agreement and to legally bind such Party hereto.

UNITED STATES DEPARTMENT OF DEFENSE, NATIONAL GUARD BUREAU

BY: 

Russell C. Davis
Lieutenant General, U.S. Air Force
Chief, National Guard Bureau

16 Feb 00
DATE

The undersigned representative of the U.S. Department of the Air Force certifies that he/she is fully authorized to consent to the terms and conditions of this Amendment No. 4 to the MMR Federal Facility Agreement and to legally bind such Party hereto.

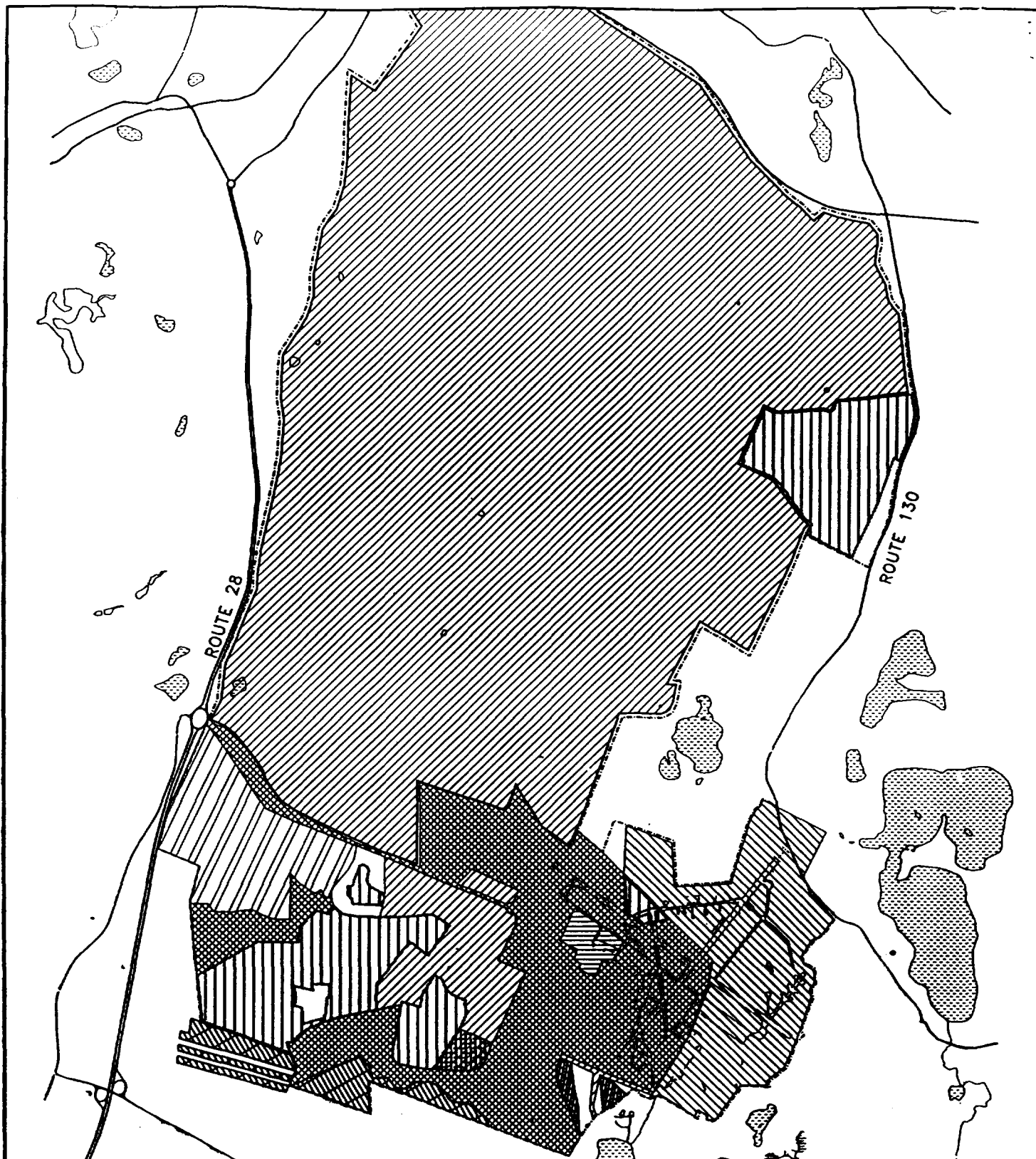
UNITED STATES DEPARTMENT OF THE AIR FORCE






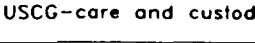






BY: Tom McCall
Thomas W. L. McCall, Jr.
Deputy Assistant Secretary of
the Air Force (Environment,
Safety and Occupational Health)

11 Feb 2000
DATE

ATTACHMENT I

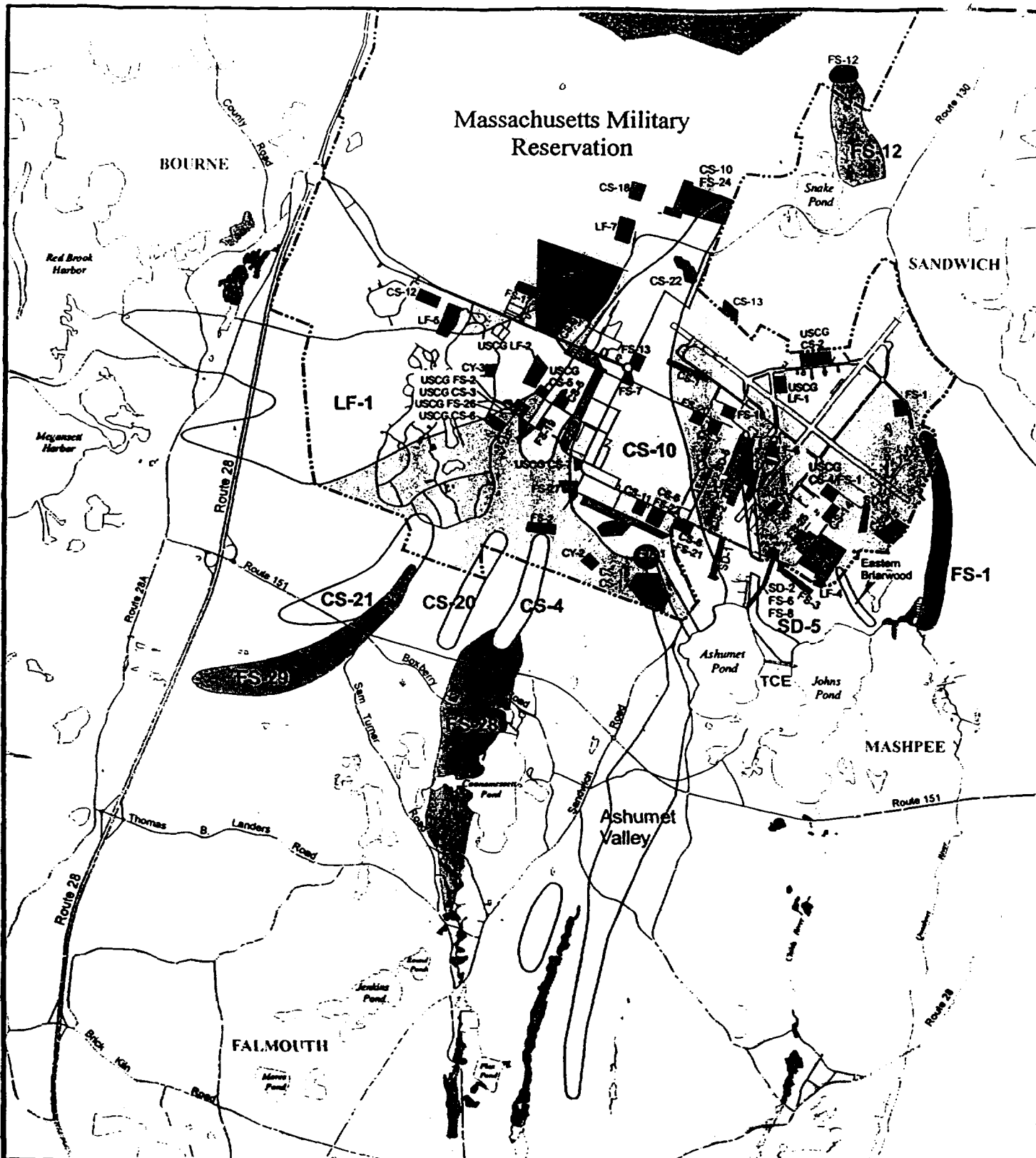
MAP IDENTIFYING MMR DOD DEPARTMENTAL AND USCG BOUNDARIES



<div></div> AIR NATIONAL GUARD <div></div> STATE MASSACHUSETTS <div></div> VETRANS NATIONAL CEMETARY <div></div> U.S. ARMY <div></div> ARNG-leased <div></div> USCG-care and custody	<div></div> U.S. AIR FORCE <div></div> U.S. COAST GUARD <div></div> COMM. OF MASS. (MILITARY COMM.) <div></div> EXCESS <div></div>	<div>PROJ. MGR.</div> <div>PROJ. GEO.</div> <div>DRAWN BY K. KING</div> <div>DRAWING NO.</div> <div>ACCESS1.DWG</div> <div>REVISION DATE 11/17/99</div> <div>DATE 3/12/97</div>	<div> JACOBS ENGINEERING GROUP INC.</div> <div>PROPERTY DISTRIBUTION OF AIR FORCE LEASED AREA AS OF JANUARY 7, 1977 MASSACHUSETTS MILITARY RESERVATION Cape Cod, Massachusetts</div> <div>PROJ. NO.</div> <div>FIGURE</div>
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ATTACHMENT II

**MAP IDENTIFYING STUDY AREAS AND AREAS OF CONTAMINATION
AS OF EFFECTIVE DATE OF THE AGREEMENT**



Legend



Concentrations exceeding MCLs
(Represents an individual exceedance of TCE or PCE)
TCE MCL = 5 µg/L
PCE MCL = 5 µg/L



Concentrations exceeding MCLs
(Represents an individual exceedance of EDB)
EDB MCL = 0.02 µg/L



Source Area

Pond

N

0 3000
Scale in Feet

Bog



Air Force Center for
Environmental Excellence



JACOBS ENGINEERING

Plume and Source Area Map May, 1999

Massachusetts Military Reservation
Cape Cod, Massachusetts

Amendment #2 (4/97)

APPENDIX VI

PLUME RESPONSE DECISION CRITERIA AND SCHEDULE

April 24, 1997

**PLUME RESPONSE DECISION CRITERIA
AND SCHEDULE**

April 24, 1997

**PLUME RESPONSE DECISION CRITERIA
AND SCHEDULE
Process Description**

April 24, 1997

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Appendix II	Explanation Of Criteria
Appendix III	Definitions
Appendix IV	Alternative Development And Selection Process Timelines and Options Implementation Timelines
	<ul style="list-style-type: none">• CS-10 Plume• Ashumet Valley Plume• LF-1 Plume• SD-5 South Plume
Appendix V	FFA Milestones Summary (Plume Response Enforceable Schedule Summary)

**PLUME RESPONSE DECISION CRITERIA
AND SCHEDULE
Process Description**

April 24, 1997

1.0 INTRODUCTION

A very important time in the clean-up phase for plumes at Massachusetts Military Reservation (MMR) is the decision point when the plume-response alternative is selected. This document presents a matrix to be used to summarize and compare response alternatives. This evaluation matrix builds upon the September 1995 Interim Record of Decision. The goal is to select a remedial alternative that achieves final cleanup solutions. There are numerous factors considered by many key participants in the screening, evaluation and selection of a response alternative. This rating system is in the form of a matrix chart called "*Plume Response Alternatives Evaluation Matrix*" and is contained in Appendix I.

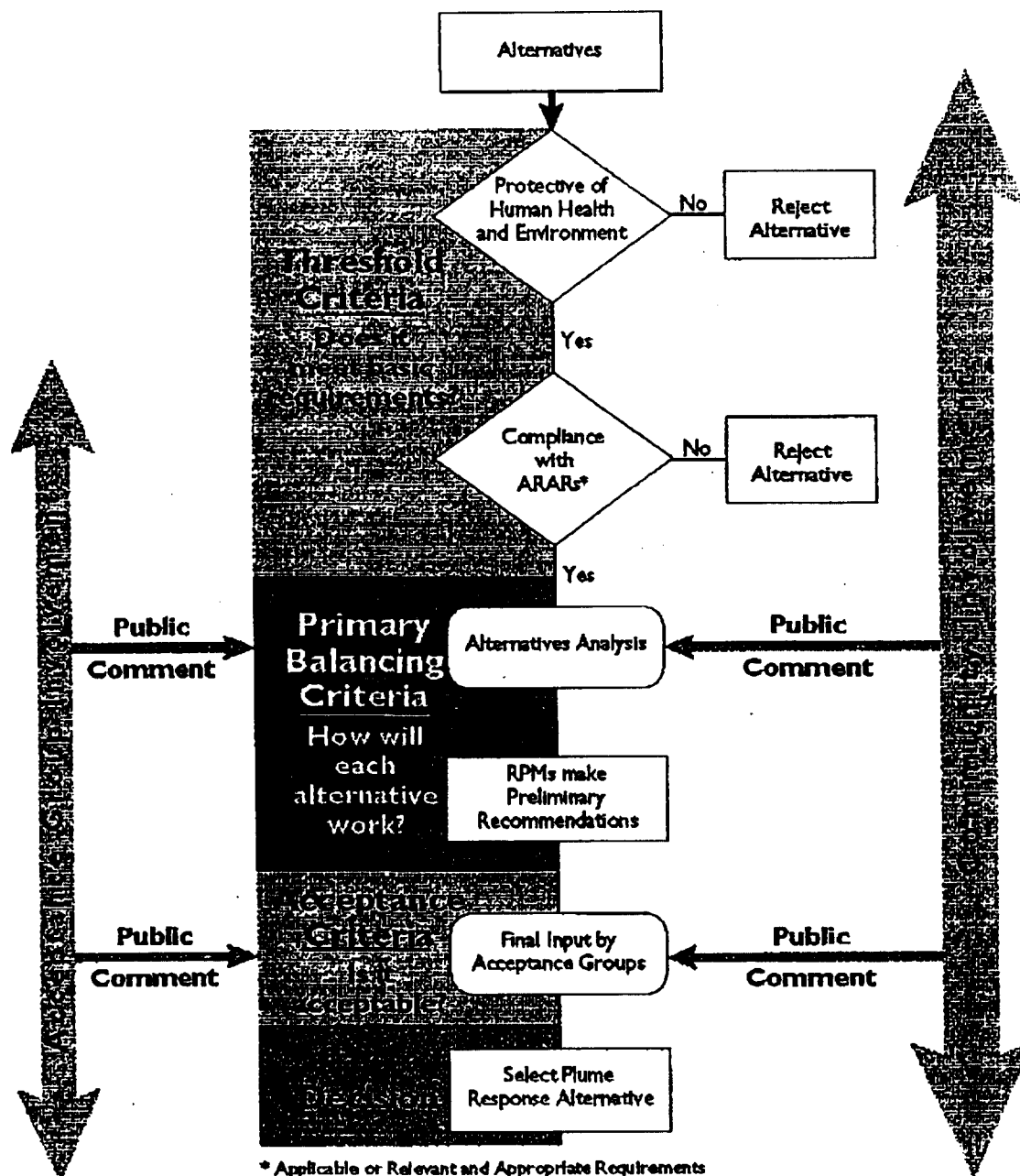
The purpose of this Alternatives Evaluation Matrix is to provide a tool whereby the audience (principally members of the public and regulatory staff) can see at a glance how individual alternatives compare one to another. Specific evaluation criteria, such as "percent capture of plume" are listed on individual rows within the matrix chart. Each alternative is listed as a column heading in the body of the chart. The estimated performance of each alternative with respect to each of the evaluation criteria is rated in comparative terms such as "low impact," "moderate impact," or "high impact" and that rating is presented in the column corresponding to the alternative being considered. The individual criteria and the manner in which the Alternatives Evaluation Matrix is filled out are presented below.

Among other key goals this matrix works toward defining cost effective alternatives that maximize capture and treatment of contaminants and cleanup of plumes to background levels if technically and economically feasible while balancing impacts on human health and the environment.

The concept is similar to that used in the magazine *Consumer Reports*, where features of similar products are compared to each other in a table so that the reader can see each product's advantages and disadvantages in order to make an informed choice on which product holds the most value for them. Figure 1.0 is the Plume Response Alternative Process Flow Diagram which shows the process of making a selection and the incorporation of the matrix in this system. The diagram also shows public involvement throughout the process.

The matrix is a table which condenses the screening process, the criteria considered and the preferred choices of stakeholder groups for each alternative considered. By nature of its design, it utilizes a qualitative approach in use and application, and must always be used in conjunction with professional judgment and sound management.

**Figure 1.0, Plume Response Alternative
Process Flow Diagram**



**PLUME RESPONSE DECISION CRITERIA
AND SCHEDULE
Process Description**

April 24, 1997

Future use and application of this tool may require necessary refinements to the decision criteria. Such changes will be finalized through consensus of the Management Review Group.

1.1 MATRIX CRITERIA

The matrix is divided into three components; (1) Threshold Criteria, (2) Primary Balancing Criteria and (3) Acceptance Criteria. These criteria are derived from the nine criteria presented in the *"National Oil and Hazardous Substance Pollution Contingency Plan; Final Rule 40 CFR 300.430"* and modified to create this site specific tool for evaluating potential response alternatives for Massachusetts Military Reservation plumes. The following summarizes the three criteria involved.

1.1.1 Threshold Criteria

The threshold criteria are used to identify response alternatives which are protective of human health and the environment, and are expected to provide an acceptable balance between plume capture and hydrologic and ecological impacts. Threshold criteria provide "pass or fail" indication for further detailed evaluation in the Primary Balancing Criteria. Failure to pass threshold criteria results in the rejection of the alternative or requires modifications to enable it to meet threshold values.

1.1.2 Primary Balancing Criteria

The Primary Balancing Criteria are then used to evaluate alternatives which have passed the threshold criteria. The Primary Balancing Criteria are focused on four general factors or issues that relate to the overall completeness, practicality and cost of the alternative. The general factors are:

- Effectiveness and Permanence
- Effectiveness of Treatment System
- Implementability
- Cost

As can be seen in the matrix in Appendix I, evaluation with respect to each of the above factors entails consideration of a variety of sub factors. The alternatives are evaluated using both qualitative and quantitative information. The Primary Balancing Criteria present the strengths and weaknesses of each alternative for comparison to each other and will provide DoD, regulators and affected communities a tool to make a balanced and informed assessment in identifying the preferred alternative.

1.1.3 Acceptance Criteria

The respective organizations, agencies and community groups ("acceptance groups") must be continuously involved in the assessment of each alternative. These groups include Public at Large, Neighborhood, Process Action Teams, Senior Management Board Selectmen Representatives, Department of Public Health/ATSDR, Natural Resources Trustees, Environmental Protection Agency, Massachusetts Department of Environmental Protection, and Department of Defense. After the Threshold and Primary Balancing Criteria portions of the matrix have been assessed, each of the acceptance groups will indicate their preferred, acceptable and unacceptable alternatives.

2.0 USE OF THE ALTERNATIVES EVALUATION MATRIX

2.1 PROCESS

The effectiveness or completeness of plume containment, capture, changes in water levels in nearby water bodies and changes in groundwater flow paths or flow rates will be estimated using one or more of the following tools:

- Application of groundwater simulation models
- Pilot test results
- Extrapolation of technology data from other sites
- Engineering calculations and/or estimates
- Experience at other remediation sites

Each potential alternative must go through a series of questions and answers to assess its potential to address clean-up at MMR. It is possible that some alternatives cannot meet the strict criteria required, or that certain characteristics are unacceptable to stakeholders and the alternative will be rejected or abandoned. Alternatives which meet criteria will be evaluated and compared in the matrix.

The process for filling out the matrix is guided by the *Explanation of Criteria* provided in Appendix II. Definitions are contained in Appendix III. Wherever possible, the rating will be based on quantitative results from the groundwater modeling or other techniques listed above. For example, the percentage of plume that is assumed to be captured can be estimated and expressed as a percentage. In other cases, the rating may reflect a subjective interpretation of a calculated value or estimated range. An example in that case would be rating the ecological impacts resulting from physiochemical changes to pond

**PLUME RESPONSE DECISION CRITERIA
AND SCHEDULE
Process Description**

April 24, 1997

inflows. Finally, some ratings may be purely subjective in that they are extrapolated from past experience or from discussions with community members.

The first draft on filling out the matrix is performed by the design teams consisting of Air Force Center For Environmental Excellence technical staff and Jacobs Engineering. These groups will provide all the back-up and draft a narrative to explain the key features and characteristics of each alternative. The design team will also have access to and interaction with the expert panels of the Technical Review and Evaluation Team and the Plume Focus Group Representatives for each plume.

The process would flow as follows;

1. The technical groups and the Remedial Project Managers will fill out the matrix for all the alternatives.
2. The Remedial Project Managers will keep the Management Review Group and respective chains of command apprised of the progress and matrix development for each plume.
3. The matrix will be presented and reviewed by the groups listed (Public at Large, Neighborhood, Process Action Teams Forums, Senior Management Board, Boards of Selectmen Representatives, Department of Public Health/Agency for Toxic Substances and Disease Registry, Natural Resources Trustees and Technical Review And Evaluation Team).
4. Neighborhood and community forums will reevaluate the alternatives. Posterboards and information sheets will be presented to the groups listed, showing how the alternatives are evaluated. Issues on the matrix will not be changed, but the rating may need to change as a result of the forums.
5. The RPMs recommend the preferred Plume Response Alternative.

By using the above process, all working groups and the public should be in a position to understand the 'preferred' alternative.

In keeping with the spirit and intent of the Community Involvement Plan, this decision-making process will be subject to review through a public comment period. This approach will ensure that community stakeholders have the opportunity to participate in the evaluation process through which remedies will be chosen to best address the Massachusetts Military Reservation contamination plumes. The public will be updated about ongoing developments through participation in public meetings, representation on the various citizen process action teams and plume focus groups, and news releases and environmental updates issued by the Installation Restoration Program office.

2.2 PREFERRED ALTERNATIVES SELECTION PROCESS

Each plume is unique in its location, size, mobility and contaminant characteristics. Therefore, the selection process and eventual implementation of a remedy will be unique and specific for each plume.

In the best of cases, an alternative which is protective of human health and the environment and has widespread acceptance will be identified. This ideal situation would make identification and communication of the remedy selection easy.

In the event that consensus is not reached, the Remedial Project Managers will further investigate stakeholders' preferences and make every attempt to understand the nature of objections and preferences. They will ensure that all the acceptance group's concerns and comments are heard and understood. They will work among themselves to determine if an alternative can be modified or compromises can be incorporated to make an alternative more attractive to the majority of the groups. After this process, the Remedial Project Managers will recommend a course of action. Remedial Project Managers will ensure that the process is diligently implemented with incorporation of public involvement. The RPM's will also keep their respective upper management apprised of the activities and developments in the process.

3.0 HOW THE MATRIX IS INCORPORATED INTO THE SCHEDULE

As plume response simulations are run, and potential response alternatives are identified, updated information will be shared at the public meetings of the stakeholders and other "Acceptance Criteria Groups," as listed in section VII of the matrix. The identification of response alternatives will be worked through the use of Plume Focus Group representatives for each plume, through Technical Review And Evaluation Team and Science Advisory Panel presentations, as well as formalized Process Action Team and Senior Management Board meetings. These meetings provide opportunity for input, concerns and requests for clarification from the public prior to finalizing the assessment of alternatives. The tentative timeline for these public meetings is shown in the schedules contained in Appendix IV.

As the decision point approaches, specific and focused meetings for the community, Process Action Teams and Senior Management Board will be scheduled to present alternatives. There will be a series of joint neighborhood Joint Process Action Team meetings, Posterboard Sessions, and Fact Sheets specifically targeted to provide information and solicit public input in building consensus for the selected response alternatives. The forum, content and delivery of these specialized meetings will be

**PLUME RESPONSE DECISION CRITERIA
AND SCHEDULE
Process Description**

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coordinated with the Program Implementation Team and will be conducted under the auspices of the Community Involvement Plan objectives.

The intent is to hold two key public meetings for each plume. The first is simply to present the alternatives and initiate community dialogue on preferences. The second meeting is intended to show the public the pros and cons of each alternative using the matrix. The official public comment period will extend approximately 2 weeks beyond this second meeting, allowing an average of 8 weeks for comments on a specific plume.

By the time the decision point arrives, the pros and cons of each alternative considered should be well understood. The date on the schedule for the decision point is when the public affirmation of the selected response alternative is expected and implementation begins.

The schedule for the technical activities leading up to response alternative identification and selection, as well as the public meetings for plumes CS-10, Ashumet Valley, LF-1, and SD-5 South are contained in Appendix IV. Also included at Appendix IV is the Options Implementation Schedule showing estimated time frames between decision points and system start-up.

To keep the program on track, the Air Force has agreed with regulatory agencies that certain enforceable milestones must be met. Appendix V contains a summarized schedule reflecting these enforceable activities for all of the plumes referenced in the *Comprehensive Plume Response Plan*. These schedules are also presented for public comment.

4.0 INCORPORATION AND ENFORCEABILITY

This "Plume Response Decision Criteria and Schedule (Criteria Document) is Appendix VI to the Federal Facilities Agreement (FFA) for the Massachusetts Military Reservation, and as such will be appended to and made part of the FFA, and shall be enforceable thereunder. The Department of the Air Force (USAF) and Environmental Protection Agency (EPA) agree that USAF's commitment to use the evaluation procedure in this Criteria Document shall constitute a "term" or "condition" of the FFA, including but not limited to Sections II, XVII, XX and XXI of the FFA

**APPENDIX I
ALTERNATIVE EVALUATION
MATRIX**

2

3

ALTERNATIVE EVALUATION MATRIX
Definitions

April 24, 1997

EVALUATION CRITERIA (Alternative Solutions as applicable)	Proposed Alternatives					
	ETR		Recirc Wells		Hybrid	
	Alt A	Alt X	Alt B	Alt X	Alt C	Alt X
THRESHOLD CRITERIA						
I. Overall Protection of Human Health and the Environment						
A. Human Health						
1. Are the exposure pathways eliminated, reduced or controlled?						
B. Environment						
1. Are the impacts of response alternative on threatened or endangered species and habitats acceptable?						
2. Are the impacts of response alternative within hydrological and ecological threshold(s)?						
II. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs) as defined in the September 1995 IROD						
PRIMARY BALANCING CRITERIA						
III. Effectiveness and Permanence of Response Alternatives						
A. Effectiveness						
1. Estimated % capture of plume by volume (100% is goal, if technically and economically feasible)						
2. Estimated % contaminant removal by mass						
a. Ethylene Dibromide (EDB)						
b. Volatile Organic Compounds						
c. Semi-volatiles						
d. Inorganics						
3. Impacts on other plume(s)						
B. Impacts associated with uncaptured portion of the plume						
1. Human health risk						
a. Carcinogenic						
b. Non-carcinogenic						
2. Ecological risk						
3. Socio-economic						
4. Water supply						
C. Characteristics of uncaptured portion of plume						
1. Volume						
2. Mass						
3. Persistence (duration)						
4. Surface water impacts						

Note: Nothing in this matrix or its explanation, definitions, or other attachments in and of themselves establishes clean up standards or performance standards or acceptable contaminant levels for MMR response actions.

ALTERNATIVE EVALUATION MATRIX

Definitions

April 24, 1997

EVALUATION CRITERIA	Proposed Alternatives						
	ETR		Recirc Wells		Hybrid		Natural Atten
	Alt A	Alt X	Alt B	Alt X	Alt C	Alt X	
(Alternative Solutions as applicable)							
D. Institutional controls for plume area							
1. Property use restrictions required							
2. Connections to public water supplies							
3. Adequacy of Institutional Controls							
a. Human health							
b. Ecological							
4. Other							
IV. Effectiveness of Treatment Systems							
A. Treatment system efficiency : Does effluent achieve background levels? (Background levels are goal, if technically and economically feasible)							
1. Ethylene Dibromide							
2. Volatile Organic Compounds							
3. Semi-volatiles							
4. Inorganics							
B. Final disposition of treatment system residuals							
C. Risks to workers associated with handling/treating/disposing of residuals							
D. Does response alternative satisfy statutory preference for treatment as principal element							
V. Implementability							
A. Time factors:							
1. Duration to partial system start-up							
2. Duration to system start-up							
3. Estimated duration of system operation							
B. Reliability of technology							
C. Coordination requirements with regulators and other agencies							
D. Property access considerations							
E. Risks associated with construction							
1. Human health							
a. Carcinogenic							
b. Non-carcinogenic							
2. Ecological							
F. Impacts associated with construction							
1. Socio-economic							
2. Environmental							

ALTERNATIVE EVALUATION MATRIX

Definitions

April 24, 1997

EVALUATION CRITERIA	Proposed Alternatives						
	ETR		Recre Wells		Hybrid		Natural Atten
(Alternative Solutions as applicable)	Alt A	Alt X	Alt B	Alt X	Alt C	Alt X	
G. Risks associated with operations							
1. Human health							
a. Carcinogenic							
b. Non-carcinogenic							
2. Ecological							
H. Impacts associated with operations							
1. Socio-economic							
2. Environmental							
VI. Cost							
A. Total capital cost							
B. Operating and maintenance cost - annual							
C. Life-cycle cost							
ACCEPTANCE CRITERIA							
VII. Acceptance of response alternative							
A. Public at large							
B. Neighborhood							
C. Process Action Teams							
D. Senior Management Board Selectmen Representatives							
E. Department of Public Health/ATSDR							
F. Natural Resource Trustees							
G. Environmental Protection Agency							
H. Massachusetts Department of Environmental Protection							
I. Department of Defense							

APPENDIX II

EXPLANATION OF CRITERIA

PLUME RESPONSE DECISION CRITERIA

Explanation of Criteria

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THRESHOLD CRITERIA

I. Overall Protection of Human Health and the Environment

A. Human Health

1. Are exposure pathways eliminated, reduced, or controlled?

- ☒ "Yes" if all exposure pathways are eliminated or significantly reduced and implementation and operation of the action or Response alternative does not create new exposure pathways. Significant reduction means that the health risk associated with any remaining or reduced pathways is expected to fall within acceptable CERCLA ranges.

☐ "No" otherwise.

B. Environment

1. Are the impacts of the response alternative on threatened or endangered species and habitats acceptable?

- ☒ "Yes" if species are absent or impacts are within an acceptable range.

☐ "No" if impacts are unacceptable.

? "Unknown" if species are present and impacts occur but effects cannot be determined

2. Are the impacts of the response alternative within hydrological and ecological thresholds?

- ☒ Yes

☐ No

II. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs), as established in 1995 Interim Record of Decision (IROD):

- ☒ Yes

☐ "Yes," with Waiver as per CERCLA

☐ No

PRIMARY BALANCING CRITERIA

III. Effectiveness and Permanence of Response Alternatives

A. Effectiveness

1. Estimated % Capture of Plume, calculated by volume (100% is goal, if technically and economically feasible):

- ☒ 100 % capture

☐ 95% - 100 % capture

☐ Less than 95 % capture

Note: For natural attenuation the capture efficiency is assumed to be 0%.

PLUME RESPONSE DECISION CRITERIA

Explanation of Criteria

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-
2. Estimated % Contaminant Removal by Mass: Mass removal percentages will be calculated for (a) EDB, (b) VOCs, (c) semi-volatiles, and (d) inorganics. Clean up to background if technically and economically feasible is assumed to be 100% removal and is expressed as a range as follows:
 - 100 % removal to background levels if technically and economically feasible
 - ◐ 90% - 100 % removal
 - Less than 90 % removal
 3. Impacts on Other Plume(s):
 - "Acceptable" if no other plumes are affected, or there are no unacceptable impacts on existing or planned capture and treatment systems.
 - "Unacceptable" if otherwise.
- B. Impacts associated with uncaptured portion of plume:
1. Human Health Risk: Cumulative human health risks would be estimated using the Baseline Risk Assessment, and any new updated data.
 - a. Carcinogenic:
 - Less than 10^{-6}
 - ◐ Within 10^{-6} to 10^{-5}
 - ◐ Within 10^{-5} to 10^{-4}
 - Above 10^{-4}
 - b. Non-Carcinogenic:
 - Below Hazard Index of 1.0
 - Hazard Index of 1.0 or Higher
 2. Ecological Risk: Would be estimated using the Baseline Risk Assessment and updated data.
 - Below Hazard Index of 1.0
 - Hazard Index of 1.0 or Higher
 3. Socio-Economic: Qualitatively considers potential impacts on commercial and residential interests, recreational areas and historical and archeological sites.
 - Low impact
 - ◐ Moderate impact
 - High impact
 4. Water Supply: Qualitatively considers impact on usability of groundwater supply by residents, business, industry. Greater impact consideration given to existing wells or current groundwater usage (immediacy of use/need).
 - Low impact
 - ◐ Moderate impact

PLUME RESPONSE DECISION CRITERIA

Explanation of Criteria

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- ☐ High impact

C. Characteristics of uncaptured portion of plume

1. Volume: The uncaptured portion of the plume would be identified and delineated. The volume will be expressed as a percentage of total plume volume. This value would be computed for the total uncaptured portion of the plume but not for specific contaminants.

- ☒ 0 % uncaptured
- ☐ 0 % - 5 % uncaptured
- ☐ More than 5 % uncaptured

2. Mass: The uncaptured portion of the plume would be identified and delineated. Mass will be expressed as a percentage of total plume mass.

- ☒ 0 % uncaptured
- ☐ 0 % - 5 % uncaptured
- ☐ More than 5 % uncaptured

3. Persistence (duration): This value, based on modeling predictions would be the time (expressed as a range of years) required for the entire uncaptured plume to travel to its discharge point or for concentrations within the plume to decrease to values that are no longer threats to human health or the ecology, whichever is longer.

- ☒ Less than 10 years
- ☐ 10 to 20 years
- ☐ Greater than 20 years

4. Surface Water Impacts:

- ☒ "No" if the uncaptured plume attenuates to concentration values that are no longer threats to human health or the ecology before reaching a fresh or marine surface water discharge point.
- ☐ "Yes" otherwise.

D. Institutional controls of the plume area (captured and uncaptured):

1. Property use restrictions required:

- ☒ No property use restrictions are required to eliminate exposure pathways under any potential future land use.
- ☐ Some restrictions are required.
- ☐ Many restrictions are required.

2. Connections to public water supplies: Refers to whether or not a connection will be necessary now or in the future.

- ☒ "None" if the current or future path of the plume is currently served by public water supplies.
- ☐ "Some" if 1-25 public water supply connections must be extended.

PLUME RESPONSE DECISION CRITERIA

Explanation of Criteria

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- ☐ "Many" if more than 25 connections must be extended.

3. Adequacy of Institutional Controls:

a. Human Health:

- ☒ "Adequate" if federal, state, or local regulations exist that provide the necessary control(s) and corresponding inspection and enforcement functions also exist and these controls are commonly implemented and historically effective.
- ☐ "Questionable" if federal, state, or local regulations exist that provide the necessary control(s) and corresponding inspection and enforcement functions also exist but these controls are not commonly implemented or exercised or they have not been historically effective.
- ☐ "Inadequate" if federal, state, or local regulations which provide the necessary control(s) do not exist or if corresponding inspection and enforcement functions do not exist.

b. Ecological:

- ☒ "Yes" if federal, state, or local regulations exist that provide the necessary control(s) and corresponding inspection and enforcement functions also exist.
- ☐ "No" if otherwise.

4. Other: To be determined as specific evaluation criteria are developed.

IV. Effectiveness of Treatment System.

A. Treatment System Efficiency : Does effluent achieve background levels? (Background levels are goal, if technically and economically feasible)

1. Ethylene Dibromide

- ☒ Yes
- ☐ No

2. Volatile Organic Compounds

- ☒ Yes
- ☐ No

3. Semi-Volatiles

- ☒ Yes
- ☐ No

4. Inorganics

- ☒ Yes
- ☐ No

B. Final Disposition of treatment system residuals

- ☒ Destruction
- ☐ Mixed (combination of destruction and transfer)

PLUME RESPONSE DECISION CRITERIA

Explanation of Criteria

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☐ Transfer

C. Risks to workers associated with handling/treating/disposing of residuals:

☒ "Low" if volume and/or nature of residual contaminants will not present operational uncertainties and risks.

☐ "Moderate" if volume and/or nature of residual contaminants will be of concern but manageable.

☐ "High" otherwise.

D. Does response alternative satisfy statutory preference for treatment as principal element:

☒ Yes

☐ No

V. Implementability

A. Time factors:

1. Duration to partial system start-up: The estimated time frame from decision point until startup for a significant portion of the overall system, ("Significant" means that higher concentration portions of the plume are being addressed or that containment of at least a quarter of the plume volume is effected.)

☒ Less than 12 months

☐ 12 to 24 months

☐ Greater than 24 months

2. Duration from decision point to system start-up.

☒ Less than 12 months

☐ 12 to 24 months

☐ Greater than 24 months

3. Estimated duration of system operation: The estimated duration that the proposed plume response alternative will have to operate.

☒ Less than 10 years

☐ 10 - 20 years

☐ Greater than 20 years

B. Reliability of Technology: Reliability will be re-evaluated after completion of pilot tests.

☒ "High" when operating systems which use accepted, proven technologies. Activated carbon, air stripping, vacuum extraction and ETR, would be scored high.

☐ "Moderate" when operating systems which use developing or new technologies. Synthetic carbon filtration, cavitation/oxidation, recirculating well technology and in situ bioremediation would be scored moderate.

- ☐ "Low" when operating systems that use emerging technologies such as reactive walls that have greater uncertainty in effectiveness.
- C. Coordination Requirements with Regulators and Other Agencies:
 - ☒ Response alternatives which require a minimal degree of regulatory and agency involvement to obtain approval will be scored High.
 - ☐ Response alternatives requiring performance tests or elaborate treatability testing or extensive permitting will be scored low.
- D. Property Access Considerations:
 - ☒ "High" if treatment systems are constructed entirely on MMR or available public lands.
 - ☐ "Moderate" for lands with 'likely' access.
 - ☐ "Low" for private properties with 'questionable' access.
- E. Risks Associated with Construction
 1. Human Health: Carcinogenic risks and hazard indexes are revised to reflect the impacts of construction activities on exposure pathways and construction workers are added as receptors. The exposure time is limited to the duration of the construction activity and only current land uses are considered. Cumulative human health risks would be estimated using the Baseline Risk Assessment, and any new updated data .
 - a. Carcinogenic:
 - ☒ Less than 10^{-6}
 - ☐ Within 10^{-6} to 10^{-5}
 - ☐ Within 10^{-5} to 10^{-4}
 - ☐ Above 10^{-4}
 - b. Non-Carcinogenic:
 - ☒ Below Hazard Index of 1.0
 - ☐ Hazard Index of 1.0 or Higher
 2. Ecological: Would be estimated using the Baseline Risk Assessment and updated data. Chemical-specific ecological hazard indexes would be re-calculated as needed to reflect construction impacts on exposure pathways or contaminant concentrations.
 - ☒ Below Hazard Index of 1.0
 - ☐ Hazard Index of 1.0 or Higher
- F. Impacts Associated with Construction:
 1. Socio-Economic: Qualitatively considers potential impacts on commercial and residential interests, recreational areas and historical and archeological sites.
 - ☒ Low impact
 - ☐ Moderate impact

- ☐ High impact

2. Environmental:

- ☒ "Low" if there are no significant adverse impacts on ecological systems; minimal disturbance of endangered species, elimination of habitat, activities in wetlands or any protective setback from wetlands or water bodies, drawdowns of surface water bodies or change in chemical composition of surface water bodies, and deforestation of old growth trees.
- ☐ "High" if there are significant adverse impacts on ecological systems.

G. Risks associated with operation:

1. Human Health: Carcinogenic risks and hazard indexes are revised to reflect the impacts of operation exposure pathways and workers and community are added as receptors. Cumulative human health risks would be estimated using the Baseline Risk Assessment, and any new updated data.

a. Carcinogenic:

- ☒ Less than 10^{-6}
- ☐ Within 10^{-6} to 10^{-5}
- ☐ Within 10^{-5} to 10^{-4}
- ☐ Above 10^{-4}

b. Non-Carcinogenic:

- ☒ Below Hazard Index of 1.0
- ☐ Hazard Index of 1.0 or Higher

2. Ecological Risk: Would be estimated using the Baseline Risk Assessment and updated data. Chemical-specific ecological hazard indexes would be re-calculated as needed to reflect operation impacts on exposure pathways or contaminant concentrations.

- ☒ Below Hazard Index of 1.0
- ☐ Hazard Index of 1.0 or Higher

H. Impacts associated with operation

1. Socio-Economic: Qualitatively considers potential impacts on commercial and residential interests, recreational areas and historical and archeological sites.

- ☒ Low impact
- ☐ Moderate impact
- ☐ High impact

PLUME RESPONSE DECISION CRITERIA

Explanation of Criteria

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2. Environmental

- "Low" if there are no significant adverse impacts on ecological systems; minimal disturbance of endangered species, elimination of habitat, activities in wetlands or any protective setback from wetlands or water bodies, drawdowns of surface water bodies or change in chemical composition of surface water bodies, and deforestation of old growth trees.
- "High" if there are significant adverse impacts on ecological systems.

VI. Cost (Present Value in thousands of dollars)

- A. Total Capital Cost
- B. Operating and maintenance Cost - annual
- C. Life-cycle cost (Capital cost and O & M cost)

ACCEPTANCE CRITERIA

VII. Acceptance of Response alternative

- Preferred
 - Acceptable
 - Unacceptable
- A. Public at large
 - B. Neighborhood Groups
Public opinion will be qualitatively assessed by the Program Implementation Team (PIT) and the Remediation Program Managers (RPMs) by assessing the sentiment of public meetings as well as by analyzing the comments received on plans at public meetings.
 - C. Process Action Teams
 - D. SMB Selectman representatives from the four affected Towns (Mashpee, Bourne, Falmouth and Sandwich) : "Yes" or "No" responses developed through a process established by the participants.
 - E. MA Department of Public Health and Agency for Toxic Substance and Disease Registry.
 - F. Natural Resource Trustees . These currently include: Air Force, National Oceanic and Atmospheric Administration, Commonwealth of Massachusetts, Army, Department of the Interior and Veterans Administration.
 - G. Environmental Protection Agency
 - H. Commonwealth of Massachusetts Department of Environmental Protection
 - I. Department of Defense

APPENDIX III DEFINITIONS

PLUME RESPONSE DECISION CRITERIA

Definitions

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ARAR (Applicable or Relevant and Appropriate Requirements). Federal or State laws and regulations that must be met during the implementation and at the completion of the remedy.

Background. Levels of chemicals which exist in the environment in the absence of contamination resulting from the disposal site of concern.

Capture. Actions taken to abate, contain or recover a contaminant by a remedy.

Carcinogenic Risk. For human health risk, carcinogenic risk is a measure of the health risks for contaminants of concerns which are known or suspected to cause cancer.

Cleanup. Actions for removing contaminants from the environment.

Containment. Actions taken to prevent further migration of a contaminant plume.

Decision Point. The time at which the plume response alternative is selected.

Decision Criteria. The factors evaluated and compared in the Plume Response Alternative Evaluation Matrix.

ETR (Extraction/Treatment/Reinjection). A system which extracts groundwater, treats it to reduce or eliminate contaminants and reinjects the treated water into the aquifer.

Feasibility of achieving background. Capability of a response alternative achieving background levels of contaminant

a. Technological Not feasible if:

- The existing technologies or modifications cannot remediate to a level of no significant risk, or to levels which approach or achieve background; or
- The reliability of the identified alternative has not been sufficiently proven and a substantial uncertainty exists as to whether it will effectively reduce risk; or
- Alternative does not or cannot be modified to meet other regulatory requirements.

b. Economic

The benefits of implementing an alternative and reducing the concentrations of contaminants in the environment to levels which approach or achieve background justifies related costs unless:

- Incremental cost for alternative is substantial and disproportional to the benefit of risk reduction, environmental restoration and monetary and non-monetary values; or
- The risk of harm to health/safety/public welfare/environment by the alternative cannot be adequately controlled.

Feasibility of 100% Capture

a. Technological

Not technically feasible if:

- The existing technologies or modifications cannot attain 100% capture;
- The reliability of the identified alternative has not been sufficiently proven and a substantial uncertainty exists as to whether it can attain 100% capture; or
- Alternative does not or cannot be modified to meet other regulatory requirements.

b. Economic

The benefits of implementing an alternative and attaining 100% capture justifies related costs unless:

- Incremental cost for alternative is substantial and disproportional to the benefits;
- The risk of harm to health/safety/public welfare/environment by the alternative cannot be adequately controlled.

Hazard Indices For human health risk, hazard index is a measure of the health risks for contaminants of concerns which are not known or suspected to cause cancer. For ecological risks, hazard index is a measure of the risks for contaminants of concern.

Hybrid A system made up of a combination of different technologies.

MCLs (Maximum Contaminant Levels) The maximum concentration of a given contaminant allowed in drinking water under State and Federal regulations.

MRG - Management Review Group. This group consisting of senior management representatives from Air Force Center For Environmental Excellence (AFCEE), Executive Office of Environmental Affairs (EOEA) the Massachusetts Department of Environmental Protection (DEP), and Environmental Protection Agency (EPA), the Air Staff (AF/ILEVR), The Secretariat (SAF/MIQ) and the four Senior Management Board selectmen make decisions on policy and management issues at MMR's clean-up program.

Natural Attenuation The process by which a compound is reduced in concentration over time by natural processes.

No Significant Risk A level of control of each identified substance of concern at a site or in the surrounding environment that no such substance of concern shall present a significant risk of harm to health, safety, public welfare or the environment during any foreseeable period of time.

Non-Carcinogenic Risk see Hazard Index

PATs -Process Action Teams. This team consists of four sub-groups which provide input on policy, management and technical issues concerning the clean-up at MMR. The following teams make up the PATs.

- **ITT - Innovative Technologies Team.** Provides input on use and development of innovative environmental technologies at MMR.

PLUME RESPONSE DECISION CRITERIA

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- **LRWS -Long Range Water Supply Team** - Provide input on technical issues involving Regional water supply development and supply in the four adjacent towns water districts, as it relates to clean-up efforts at MMR.
- **PCT - Plume Containment Team.** Provides input on policy and management and technical issues involving numerous plume response activities.
- **PIT -Program Implementation Team** - Provides input on community outreach and public involvement efforts.

Pilot Test. Demonstrations of technologies/systems to evaluate performance under field conditions. The results are used to develop alternatives and design full scale treatment systems.

Plume. A body of groundwater containing contaminants exceeding Maximum Contamination Levels (MCLs), as defined by multiple samples from multiple wells. In the absence of MCLs, a risk-based level will be established.

Recirculating Well. A Process for capturing, treating and releasing groundwater within the same well. This process is not expected to adversely impact the water table.

Plume Response Alternative. A specific configuration of treatment system(s) to be compared and evaluated.

Residuals. The hazardous and/or non-hazardous byproducts of a treatment process which require disposal.

RPMs (Remedial Program Managers). The RPM team consists of the Program Managers appointed by Massachusetts Department of Environmental Protection (DEP), Environmental Protection Agency (EPA), and Air Force Center For Environmental Excellence (AFCEE). This team provides critical day to day input, direction and decisions on schedule, enforceable milestones and technical progress and overall operations of the project.

SMB (Senior Management Board). This group consist of the selectmen of the four adjacent towns (Bourne, Mashpee, Falmouth and Sandwich), Coast Guard, MA National Guard, Department of Environmental Protection (DEP), Environmental Protection Agency (EPA), and Department of Public Health (DPH). Their current tasking is to provide input on policy and management issues involving plume containment actions of public concern and review the work of all other citizen involvement teams, including the PAT's.

Treatment. A method, technique or process designed to change the physical, chemical or biological character or composition of contaminated groundwater.

TRET (Technical Review and Evaluation Team). This group of hydrogeological and ecological experts contain scientist from Massachusetts Department of Environmental Protection (DEP), Environmental Protection Agency (EPA), HAZWRAP/Oakridge National Laboratories, Waste Policy Institute, AFCEE, Cape Cod Commission, United States Geological Survey (USGS), University of Utah, Kansas State University, the Science Advisory Panel, Woods Hole Oceanic Institution and other local

PLUME RESPONSE DECISION CRITERIA

Definitions

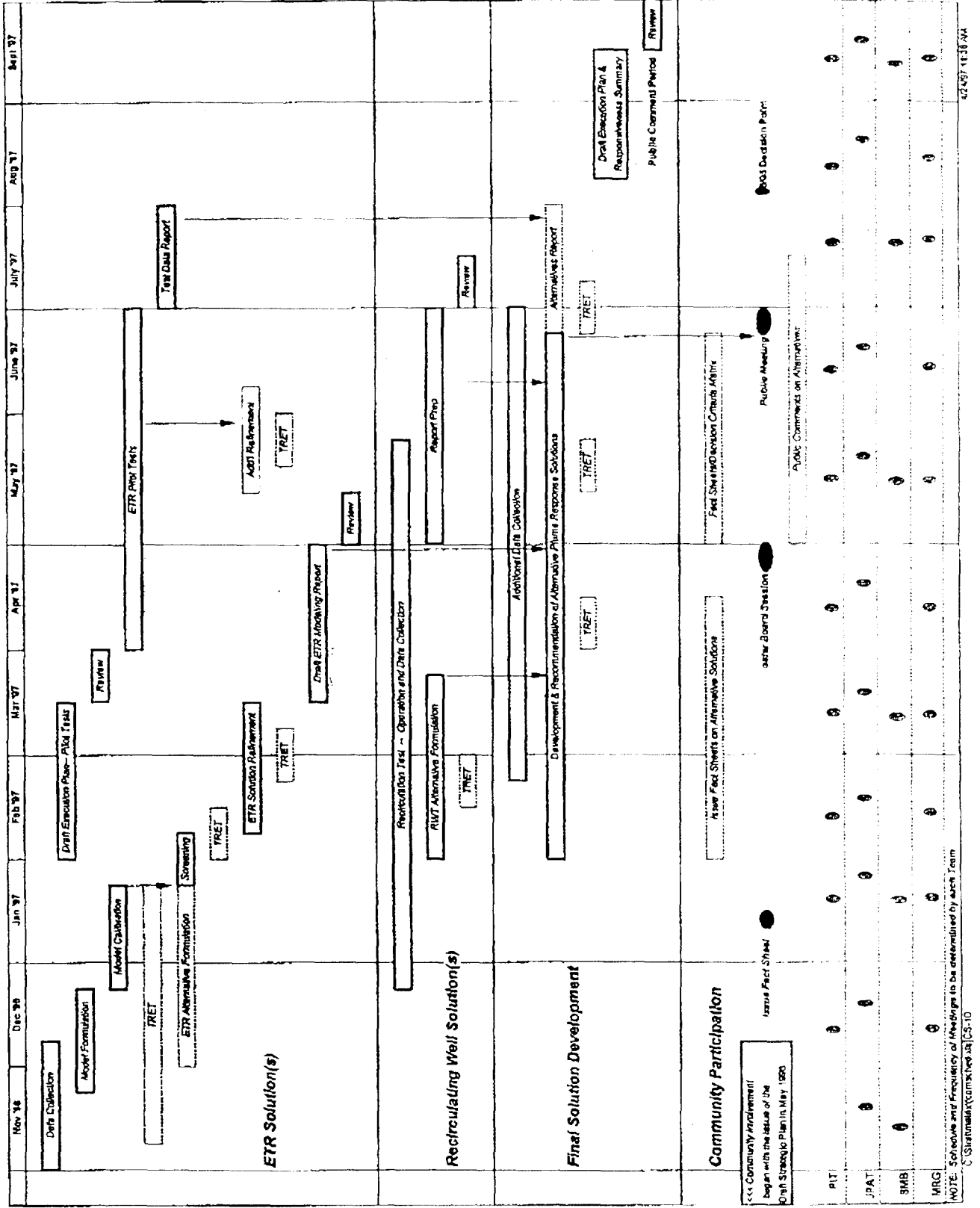
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scientists. The TRETs tasking is to advise the RPMs, AFCEE and its contractors on technical and scientific issues of concern.

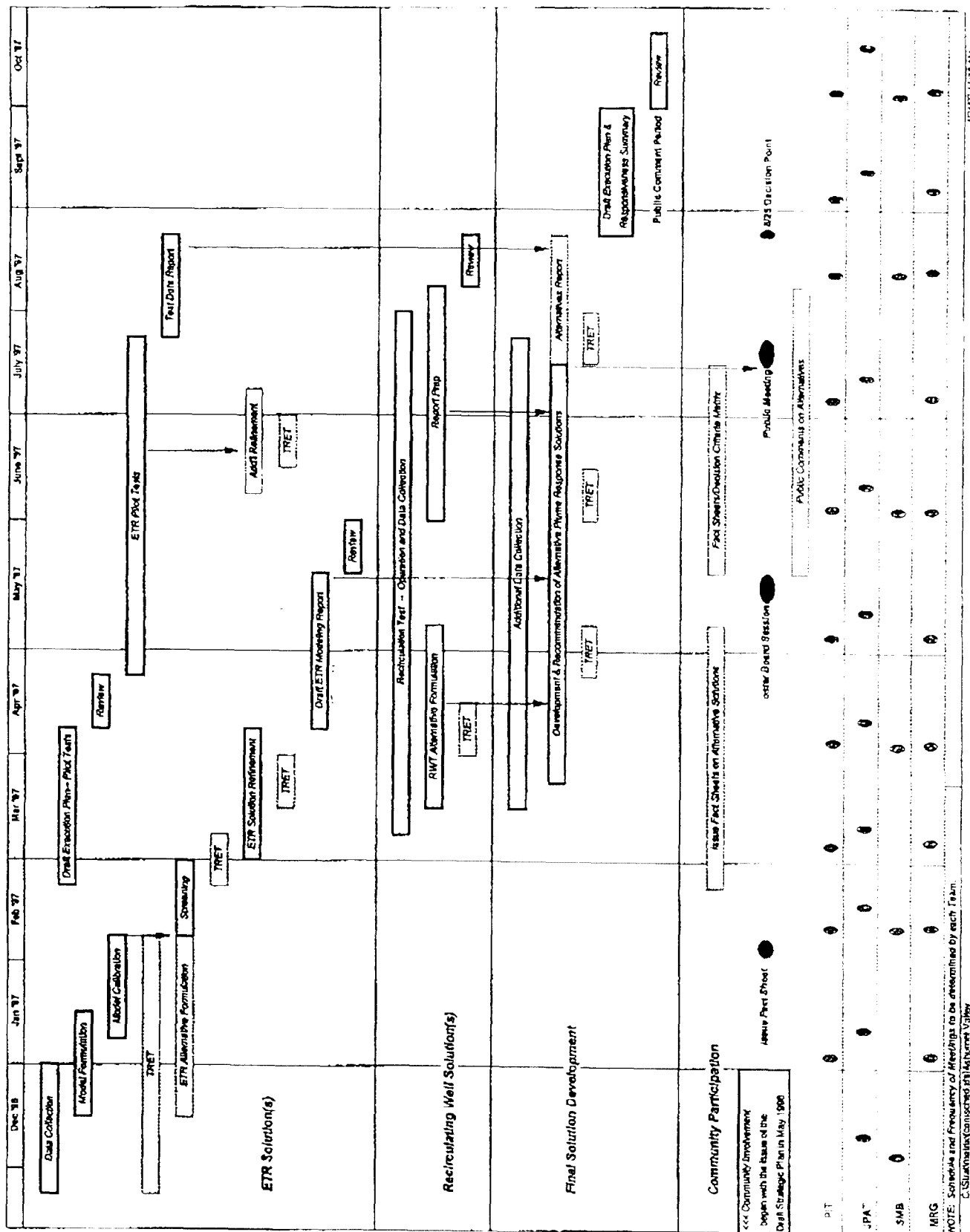
APPENDIX IV
ALTERNATIVE DEVELOPMENT AND SELECTION
PROCESS TIMELINES
AND
OPTIONS IMPLEMENTATION TIMELINES

- **CS-10 Plume**
- **Ashumet Valley Plume**
- **LF-1 Plume**
- **SD-5 South Plume**

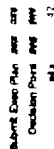
MMR Plume Response Program ALTERNATIVE DEVELOPMENT AND SELECTION PROCESS CS-10 Plume



MMR Plume Response Program ALTERNATIVE DEVELOPMENT AND SELECTION PROCESS Ashmet Valley Plume



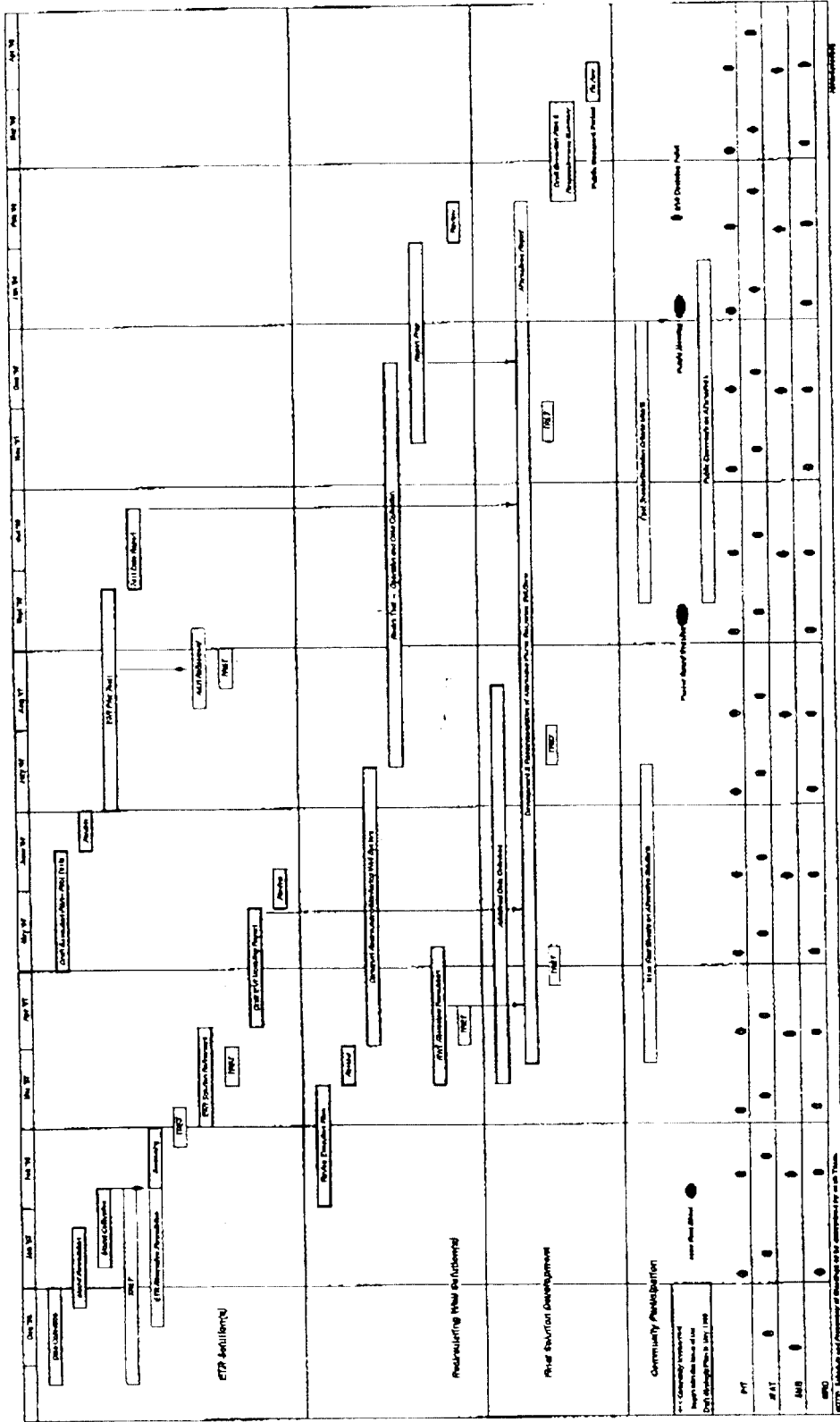
MIKE P/Utens Response Program



ALTERNATIVE DEVELOPMENT AND SELECTION PROCESS SD-5 South Platte

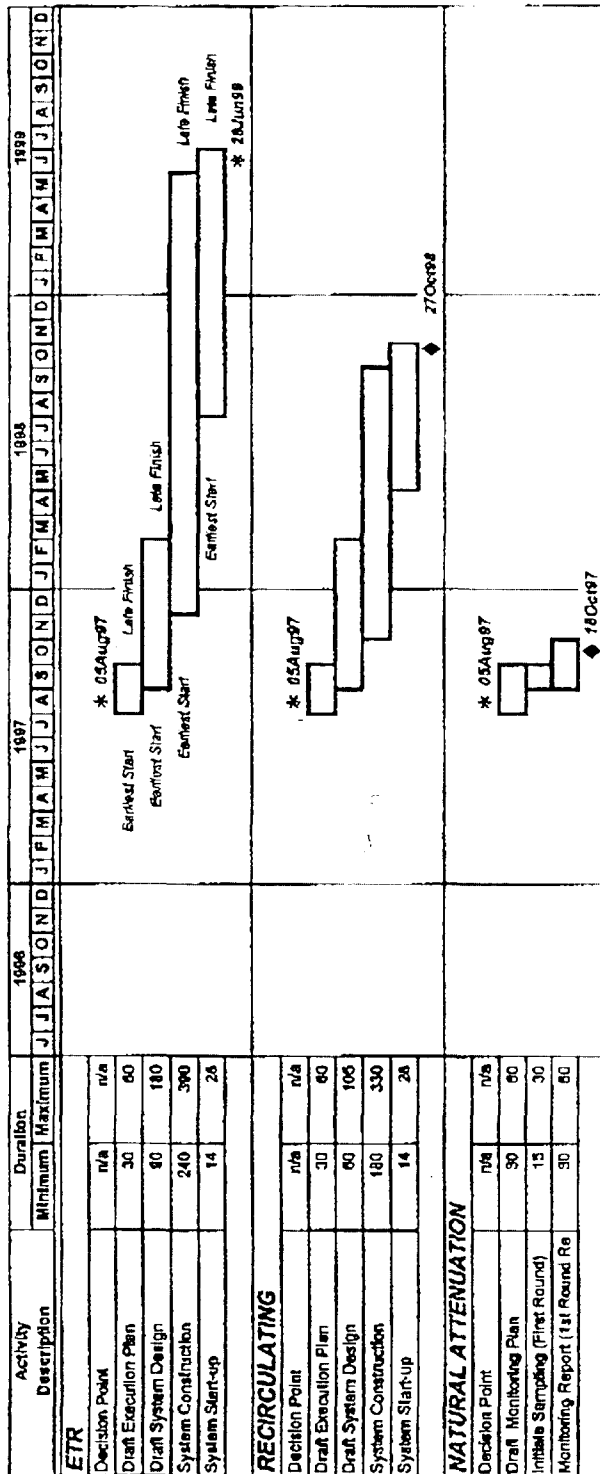
March 1990, Revised 6/1990

3/1990
6/1990
11/1990
1/1991



ETP Study Area and Preliminary Work Development
ETP Study Area and Preliminary Work Development

NMR Plume Response Program CS-10 PLUME OPTIONS IMPLEMENTATION SCHEDULE



Footnote:

A full implementation schedule will be included in the Full System Draft Execution Plan which will be submitted 4 to 6 weeks after the decision point. "System Start-up" milestone is driven by the ETR system (longest duration design & construction schedule).

Legend:

* FFA Milestone Date, if Full ETR or Combined-Technology system is selected action.

◆ FFA Milestone Date, if technology (i.e. recirculating wells or natural attenuation) is sole action selected.

The following assumptions were used to construct enforceable milestones:

1. Size of plume
2. Types and levels of contaminants
3. Complexity of system
4. Access availability
5. Time of year for construction
6. Size of monitoring/sampling program
7. Agreed-upon decision criteria as of February 1997

A change in any of the foregoing assumptions may be cause for extension of the enforceable milestones, but shall not automatically be grounds for any such extension.

HMIR Pumps Response Program

Footnote:

Footnote:
A full Implementation Schedule will be included in the Full System Draft Execution Plan which will be submitted 4 to 6 weeks after the decision point. "System Start-up" milestones are driven by the ETR system (once at duration design & construction schedule).

Learned:

- * FFA Milestone Date, if null ETR or Combined-Technology system is selected action.

The follow/no assumptions were used to construct enforceable milestones;

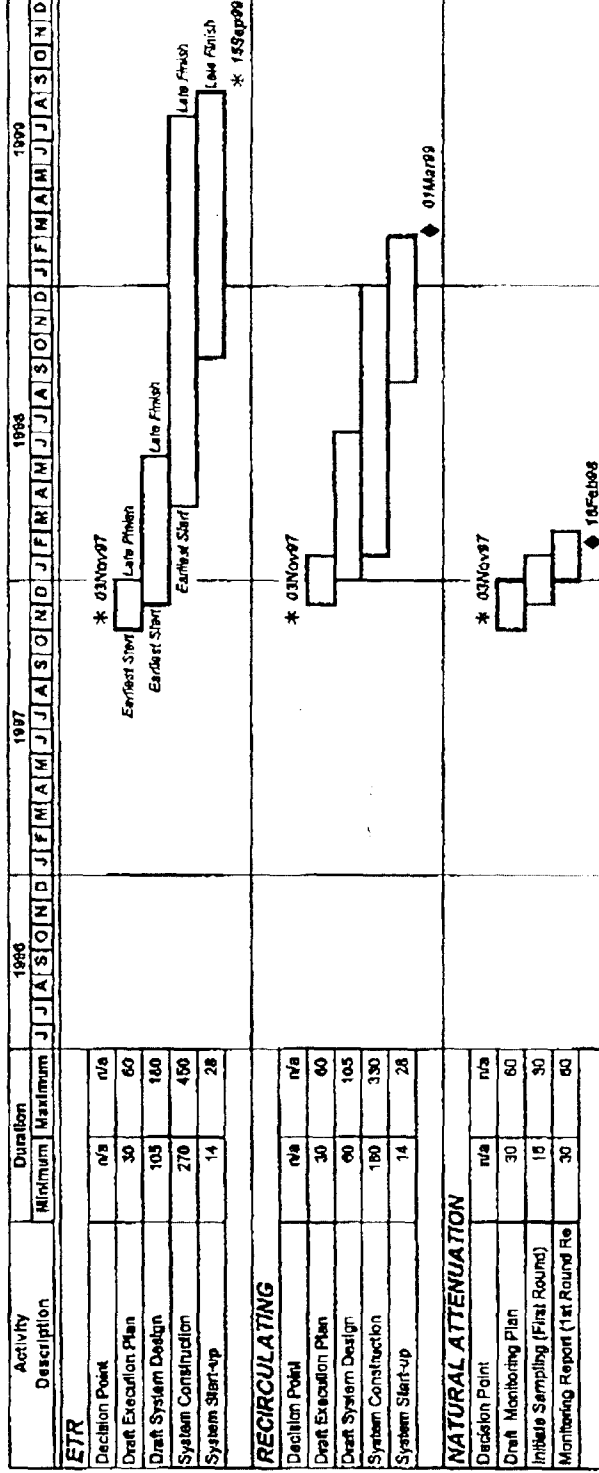
1. Size of plume
2. Types and levels of contaminants
3. Complexity of system
4. Access availability
5. Time of year for construction
6. Size of monitoring/sampling program
7. Amount/location of clean materials at site of EIS

A change in any of the foregoing assumptions may be cause for extension of the enforceable milestones, but shall not automatically be grounds for any such extension.

MMR Plume Response Program

LE-1 PLUME OPTIONS

IMPLEMENTATION SCHEDULE



Footnote:

A full Implementation Schedule will be included in the Full System Draft Execution Plan which will be submitted 4 to 6 weeks after the decision point. "System Start-up" milestones is driven by the ETR system (longest duration design & construction schedule).

Legend:

- * FFA Milestone Date, if full ETR or Combined-Technology system is selected action.
- ◆ FFA Milestone Date, if Technology (i.e. recirculating wells or natural attenuation) is sole action selected.

The following assumptions were used to construct enforceable milestones:

1. Size of plume
 2. Types and levels of contaminants
 3. Complexity of system
 4. Access availability
 5. Time of year for construction
 6. Size of monitoring/sampling program
 7. Agreed-upon decision criteria as of February 1997
- A change in any of the foregoing assumptions may be cause for extension of the enforceable milestones but shall not automatically be grounds for any such extension.

MMR Plume Response Program

Footnote:
A full Implementation Schedule will be included in the Full System Draft Execution Plan which will be submitted 4 to 8 weeks after the decision point. "System Start-up" milestone is driven by the ETR system (longest duration design & construction schedule).

Legend:
* FFA Milestone Date, if full ETR or Combined-Technology system is selected action.
◆ FFA Milestone Date, if technology (i.e. recirculating vents or natural aeration) is sole action selected.

APPENDIX V
FFA MILESTONES SUMMARY
(Plume Response Enforceable Schedule Summary)

MMR Plume Response Program FFA MILESTONES SUMMARY

Plume	ID	Description	Activity																														
			1996				1997				1998				1999																		
SD-5 South Plume			J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
SD-5 South Recirculating Well Pilot Test																																	
A10512		Submit Draft Recirc Execution Plan					* 21Oct98																										
A12522		Complete First 10 Wells									* 10Jun97 *																						
A12050		System Startup									* 26Jul97 *																						
A13512		Submit Draft Recirc System Evaluation Report													* 31Jan98 *																		
SD-5 South Pilot ETR																																	
AU0512		Submit Draft Pilot ETR Execution Plans									* 17Jun97																						
AU2512		Completion of 2 Pilot ETR Extraction Wells									* 26Aug97																						
AU3502		Submit Pilot ETR Test Data Report									* 21Oct97																						
AU0537		Submit Draft Full-Scale Execution Plan													* 24Mar98 *																		
AU9901		System start-up																	See Footnotes 1 & 2 * 22Jun99 *														
ES-28 EDR RIFES																																	
AM0552		Submit Draft RIFES Work Plan					* 15Nov96																										
AM3512		Submit Draft Technical Decision Memo					* 14Feb97																										
AM3536		Submit Draft Site Characterization Report									* 27Aug97																						
CS-4 Extraction Fence Evaluation																																	
ABB-ES		Submit Draft Technical Memo					* 28Jan97 *				See Footnote 4																						
Western Aqua Farm Monitoring																																	
AO0512		Submit Draft Monitoring Plan					* 16Aug96																										
AO3002		Initiate Sampling					* 01Oct96																										
Submit Annual Evaluation Report																																	
Blairwood Monitoring																																	
AP0512		Submit Draft Monitoring Plan					* 16Aug96																										
AP3006		Initiate Sampling					* 15Oct96																										
Submit Annual Evaluation Report																																	
Inorganic Investigation																																	
AS0512		Submit EvalData/Draft Work Plan					* 15Aug96																										
AS3012		Commence Sampling/Analysis Inorganic					* 26Aug96																										
AS3512		Submit Draft Inorganic Report					* 31Jan97																										

Footnotes:

1. A Full Implementation Schedule will be included in the Full System Draft Execution Plan which will be submitted 4 to 8 weeks after the decision point. "System start-up" milestone is driven by the ETR system (longest duration design & construction schedule).
2. Dates indicated with an asterisk (*) have been revised to reflect property access delays and/or changed site conditions.
3. "Phase II System Startup" date will be developed in March 1997.
4. Date revised to reflect weather and equipment delays.
5. Annual Evaluation Report submittal date will be developed in February 1997.

The following assumptions were used to construct enforceable milestones:

1. Size of Plume
 2. Types and levels of contaminants
 3. Complexity of system
 4. Access availability
 5. Time of year for construction
 6. Size of monitoring/sampling program
 7. Agreed-upon decision criteria as of February 1997
- A change in any of the foregoing assumptions may be cause for extension of the enforceable milestones, but shall not automatically be grounds for any such extension

C:\STORMWATER\FAM\milestones.msp FFA Milestones 22Jun97

4/24/97 11:39 AM

MMR Plume Response Program
FFA MILESTONES

SUMMARY

Activity		1996												1997												1998												1999												
Plume	ID	Description	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D					
SD-5 North Containment System																																																		
AC0514	AC1014	Submit Draft Execution Plans	* 17 Sep96												* 05Nov96												* 21Apr97												* 05Aug97											
		Submit Draft Remedial System Design																																																
		Complete Foundation & 6 Wells																																																
AC2102		System Startup																																																
ES-12 Containment System																																																		
AD0512	AD1014	Submit Draft Execution Plans	* 08Sep96												* 21Oct96												* 29Apr97												* 24Sep97											
		Submit Draft Remedial System Design																																																
		Complete Foundation & 6 Wells																																																
AD2102		Phase I System Startup																																																
AD2350	Phase II System Startup																									See Footnote 2 * TBD See Footnote 3																								
CS-10 Plume																																																		
AF0512	AF2522	Submit Draft Recirculating Well Pilot Test	* 22Aug96												* 08Nov96												* 10Mar97												* 01Jul97											
		Complete First 10 Wells													* 23Dec96												* 03Jun97												* 28Jul97											
		System Startup																																																
AF3512		Submit Draft Recirc System Evaluation Report																																																
CS-10 Pilot ETR																																																		
AJ0512	AJ3502	Submit Draft Pilot ETR Execution Plans	* 10Mar97												* 03Jun97												* 28Jul97												* 16Sep07											
		Completion of 2 Pilot ETR Extraction Wells																																																
		Submit Pilot ETR Test Data Report																																																
AJ0537		Submit Draft Full-Scale Execution Plan																																																
AJ9901	System start-up																																					See Footnote 1 * 28Jun99												
Ashumet Valley Plume																																																		
AG0512	AG2522	Submit Draft Recirculating Well Pilot Test	* 21Oct96												* 24Jan97												* 04Mar97												* 11Aug97											
		Submit Draft Recirc Execution Plan																																																
		Complete First 10 Wells																																																
AG2030		System Startup																																																
AG3512	Submit Draft Recirc System Evaluation Report																																																	
Ashumet Valley Pilot ETR																																																		
AK0512	AK2512	Submit Draft Pilot ETR Execution Plans	* 18Apr97												* 28Jun97												* 21Aug97												* 09Oct97											
		Completion of 2 Pilot ETR Extraction Wells																																																
		Submit Pilot ETR Test Data Report																																																
AK3502		Submit Draft Full-Scale Execution Plan																																																
AK0537	System start-up																																																	
AK9901	System start-up																																					See Footnote 1 02Sep99 *												
LF-1 Plume																																																		
AH0512	AH2522	Submit Draft Recirculating Well Pilot Test	* 21Oct96												* 02Jun97												* 05Aug97												* 15Oct97											
		Submit Draft Recirc Execution Plan																																																
		Complete First 10 Wells																																																
AH2050		System Startup																																																
AH3512	Submit Draft Recirc System Evaluation Report																																																	
LF-1 Pilot ETR																																																		
AL0512	AL2512	Submit Draft Pilot ETR Execution Plans	* 14May97												* 23Jul97												* 18Sep97												* 15Dec97											
		Completion of 2 Pilot ETR Extraction Wells																																																
		Submit Pilot ETR Test Data Report																																																
AL0537		Submit Draft Full-Scale Execution Plan																																																
AL9901	System start-up																																					See Footnotes 1 & 2 15Sep99 *												

MIMR Plume Response Program
FFA MILESTONES
SUMMARY

(Revised 24-Apr-97)

Solely because of the unique characteristics of the Massachusetts Military Reservation site and its environmental remediation history and in the full expectation that the complete dispute resolution procedures set forth in the Model Provisions for CERCLA Federal Facility Agreements with the Department of Defense dated June 17, 1988 will continue to apply to other FFAs negotiated or to be negotiated in connection with other Department of Defense facilities, the Parties agree to abide by the following dispute resolution procedures at MIMR with respect to disputes over whether enforceable milestones have been missed in the conduct of response actions at MIMR. In connection solely with such disputes, the Parties agree that the dispute resolution procedures of Section XIII of the FFA shall not apply. Instead, once the EPA has notified the Air Force that EPA believes that the Air Force has missed a milestone under this enforceable schedule and the Air Force has invoked dispute resolution in accordance with paragraph 21.2 of Section XXI of the FFA, the Parties will submit the dispute within one working day to the Regional Administrator of EPA-New England and Deputy Assistant Secretary of the Air Force for Environmental Safety and Occupational Health. They will confer and exert their best efforts to resolve the dispute and issue a unanimous written decision signed by the Air Force and EPA. If unanimous resolution of the dispute is not reached within fourteen (14) days of such submittal, then the dispute will immediately be elevated to EPA's Administrator for resolution within 21 days of the expiration of the 14-day period.

This paragraph shall apply only to disputes at MIMR specifically set forth in this paragraph and the Parties anticipate that this paragraph shall not apply as precedent for other FFAs at DOD facilities.