

NOTES & SOURCES:
 Basemap data from US Geological Survey 7 1/2 minute
 Topographic Maps. Source: MassGIS

DRAFT

AMEC Earth & Environmental, Inc.
 Westford, Massachusetts

J:\Demo 1\GW\Decision Document\MMR-9934 Figs. & Tables
 RCL Decision Document\ID9934_Fig1.pdf
 G:\MMR_COE\work\2006\ID9934\ID9934_Fig1.mxd
 January 12, 2005 DWN: JBB AP CHKD: BK



Impact Area
 Groundwater Study Program

Location of Demo 1
 Massachusetts Military Reservation
 Decision Document
 Demo 1 Groundwater OU

FIGURE

1

Impact Area Groundwater Study Program

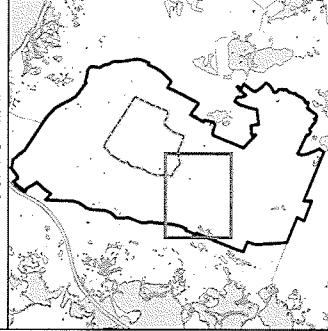
LEGEND

- Existing Monitoring Well
 - Proposed Monitoring Well
 - Piezometer
 - Staff Gauge
 - Extraction Well
 - ▲ Injection Well
- Perchlorate in Groundwater**
- 2 to 24 ppb
 - 24 to 200 ppb
 - > 200 ppb

- Treatment System Piping
- Cross Section

Note: Plume shell illustrated is representative of widest observed at each transect cross-section. Groundwater data through April 2006. Contour lines dashed where inferred.

LOCATION MAP



NOTES & SOURCES

Base map data from US Geological Survey 7 1/2 minute Aerial Photos. Color Digital Orthophotos. Date: Flown 2002. Source: EarthData International.

TITLE

Perchlorate Distribution in Groundwater
April 2006 Sampling Round
2006 System Performance and
Ecological Impact Monitoring Report
Demo 1 Groundwater Operable Unit



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FIGURE
7-1



**Impact Area
Groundwater Study Program**

LEGEND

- Existing Monitoring Well
- Proposed Monitoring Well
- Piezometer
- Staff Gauge
- Extraction Well
- ▲ Injection Well

RDX in Groundwater

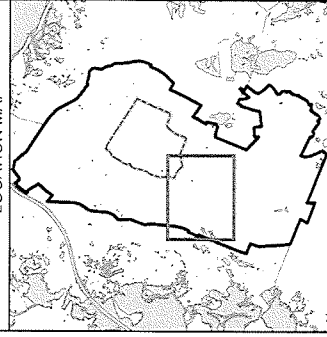
- 0.6 to 2 ppb
- 2 to 20 ppb
- 20 to 200 ppb
- > 200 ppb

Treatment System Piping

- Treatment System Piping
- Cross Section

Note: Piezometer depths are reported in feet above/below ground surface at each interval cross section. Groundwater data through April 2006. Contour lines dashed where inferred.

LOCATION MAP



NOTES & SOURCES

Base map data from US Geological Survey 7 1/2 minute topographic maps. Source: Maricopa Army Center. Date from: 2002. Source: EarthInfo International

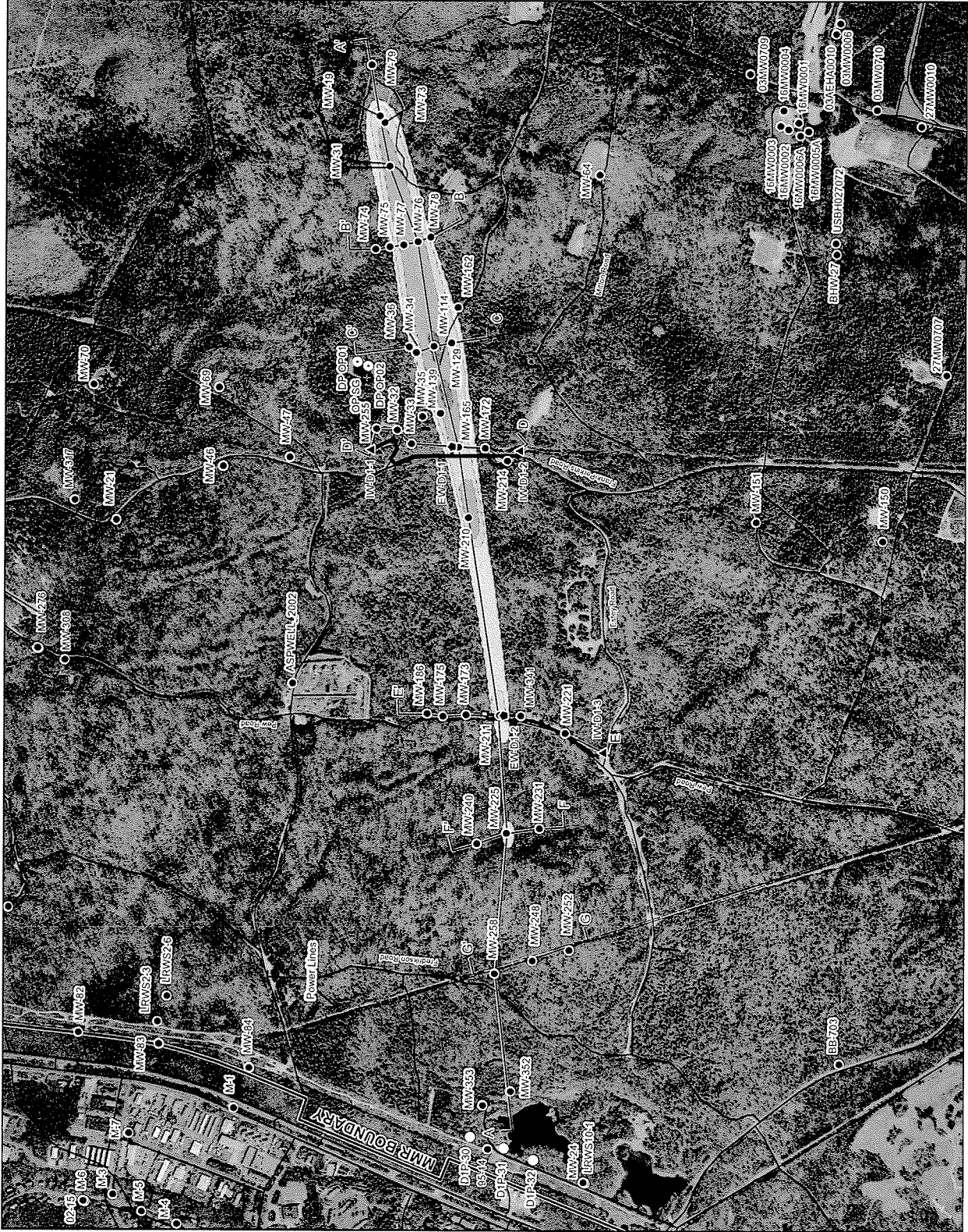
TITLE

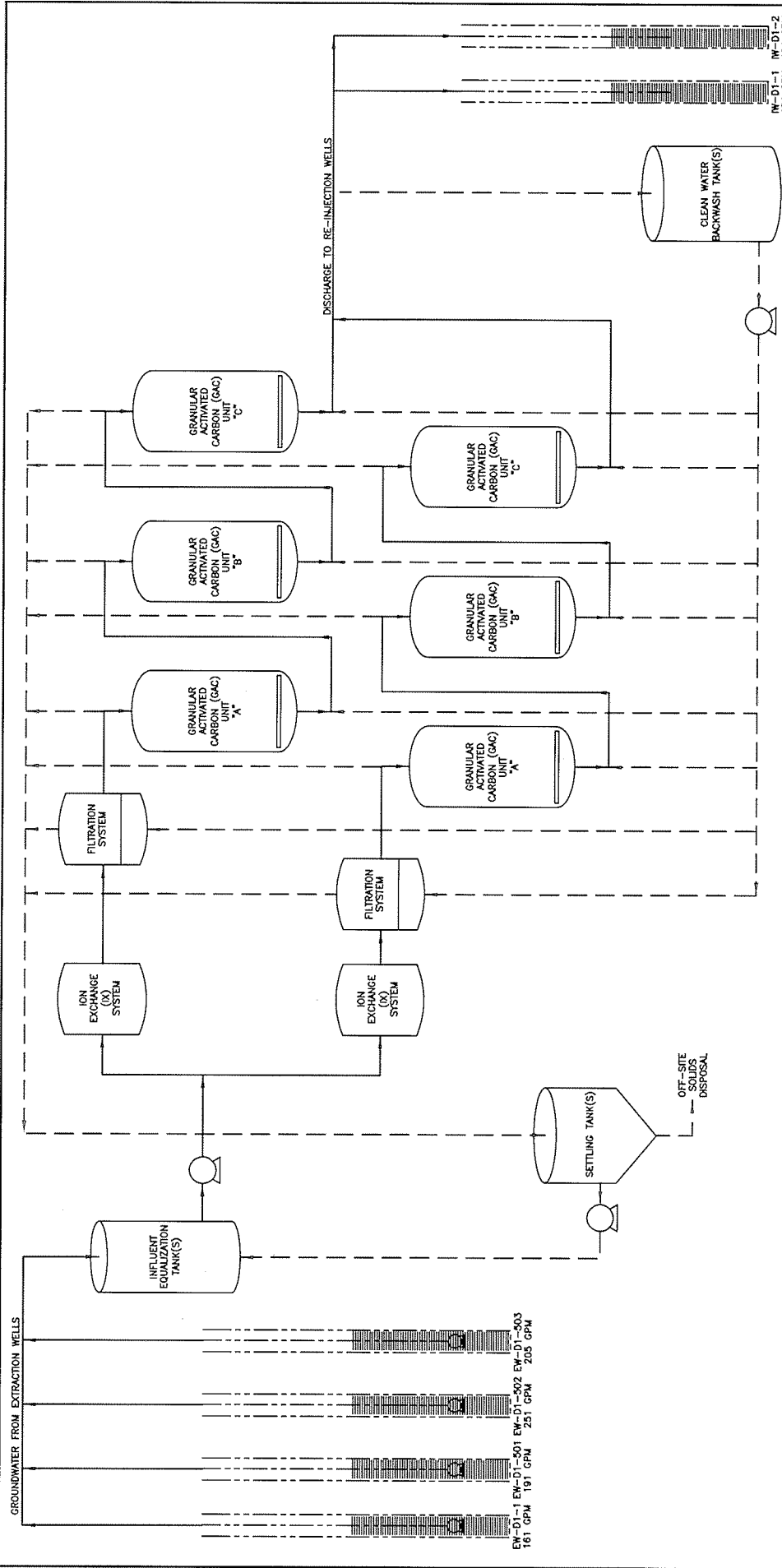
**RDX Distribution in Groundwater
April 2006 Sampling Round
2006 System Performance and
Ecological Impact Monitoring Report
Demo 1 Groundwater Operable Unit**



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**FIGURE
7-7**





ALTERNATIVE 5 -- ADDITIONAL ALTERNATIVE A
PROCESS FLOW DIAGRAM
FRANK PERKINS ROAD

DECISION DOCUMENT
 DEMO 1 GROUNDWATER OPERABLE UNIT

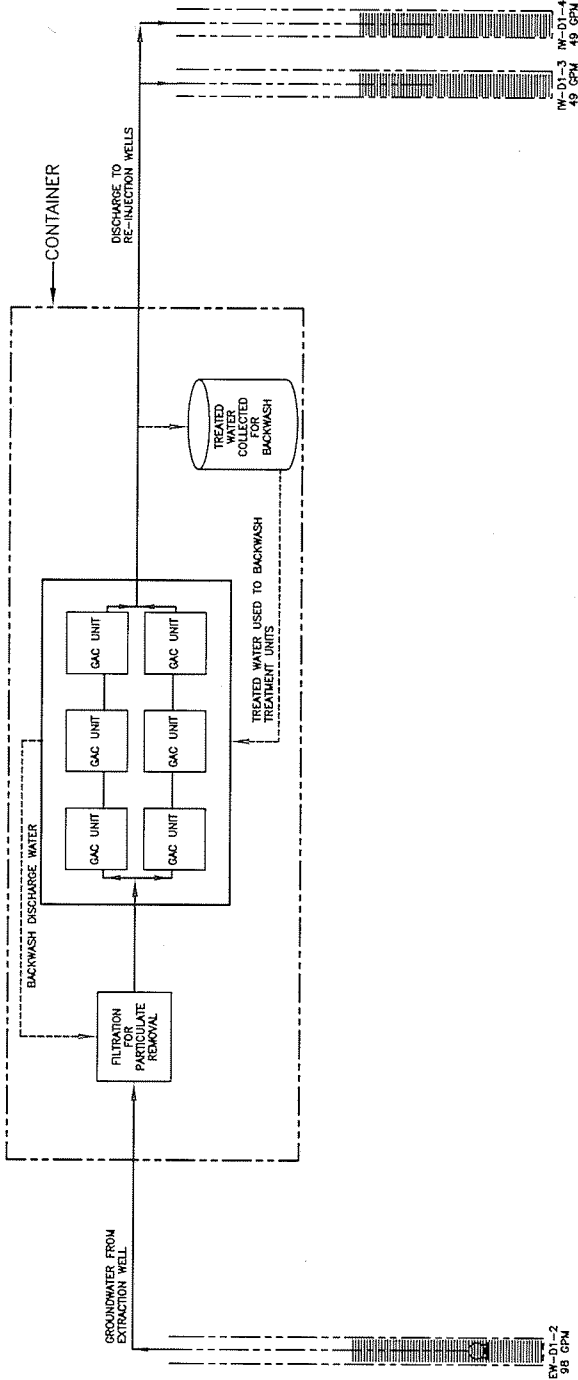
PROJECT MANAGER	U. APPELZEE	DRAWING NUMBER	FR 4.010
CHECKED BY	J. BUZZER	PROJECT NUMBER	3-100-008
DRAWN BY	R. ROYALAN	FIGURE NUMBER	4
DATE DRAWN	1/12/05		

NOTE:
 NON-CRITICAL ASPECTS OF PROCESS FLOW DIAGRAM MAY CHANGE DURING THE CONSTRUCTION PROCESS.

LEGEND:
 ——— NORMAL OPERATIONS
 - - - BACKWASH OPERATIONS

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239 LITTLETON ROAD
 SUITE 19
 WEST FORD, MASSACHUSETTS 01886



LEGEND:
 ——— NORMAL OPERATIONS
 - - - BACKWASH OPERATIONS

NOTE:
 NON-CRITICAL ASPECTS OF PROCESS FLOW DIAGRAM MAY CHANGE DURING THE CONSTRUCTION PROCESS.

ALTERNATIVE 5 - ADDITIONAL ALTERNATIVE A PROCESS FLOW DIAGRAM PEW ROAD DECISION DOCUMENT DEMO 1 GROUNDWATER OPERABLE UNIT	
PROJECT MANAGER	M. APPELBE
CHECKED BY	J. KELZON
DRAWN BY	R. BOYMAN
DATE DRAWN	1/12/06
DRAWING NUMBER	PG. 01/06
PROJECT NUMBER	2-1300-008
FRAME NUMBER	5

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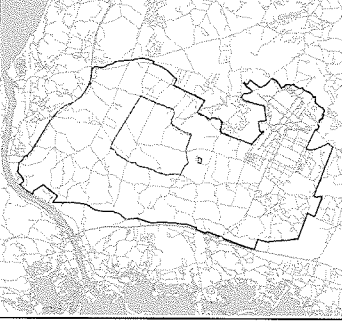
**Impact Area
Groundwater Study Program**



LEGEND

- Existing Monitoring Well
- ~ Elevation Contour (Labeled in Feet Above NGVD)
- Demo 1

LOCATION MAP



NOTES & SOURCES

Base map data from US Geological Survey 7 1/2 minute
Topographic Map, Series 100000
Scale: 1:25000
Resolution: 0.5 Feet, Date: 1987, Source: Aerial, E.T.G.

TITLE

**Demo 1 Former Source
Area Site Plan
Decision Document
Demo 1 Groundwater OU**



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AMEC Earth & Environmental, Inc.
Westford, Massachusetts
FIGURE 6
10/11/2010
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January 12, 2010 10:41 AM, 2010-01-12 10:41 AM



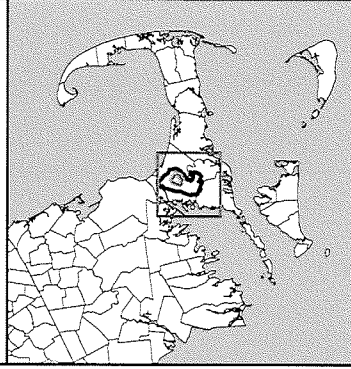
Impact Area
Groundwater Study Program



LEGEND

- Perchlorate Plume Extent
- Sand and Gravel Deposits
- Till or Bedrock
- Sandy Till Over Sand
- End Moraines
- Large Sand Deposits
- Fine-Grained Deposits
- Floodplain Alluvium

LOCATION MAP



NOTES & SOURCES

Map Coordinates: NAD 83, UTM, Zone 18N, Meters
 Basemap data from US Geological Survey 7.5 minute
 Topographic Map. Source: MassGIS

TITLE

Surficial Geology of
 Western Cape Cod
 Decision Document
 Demo 1 Groundwater OU



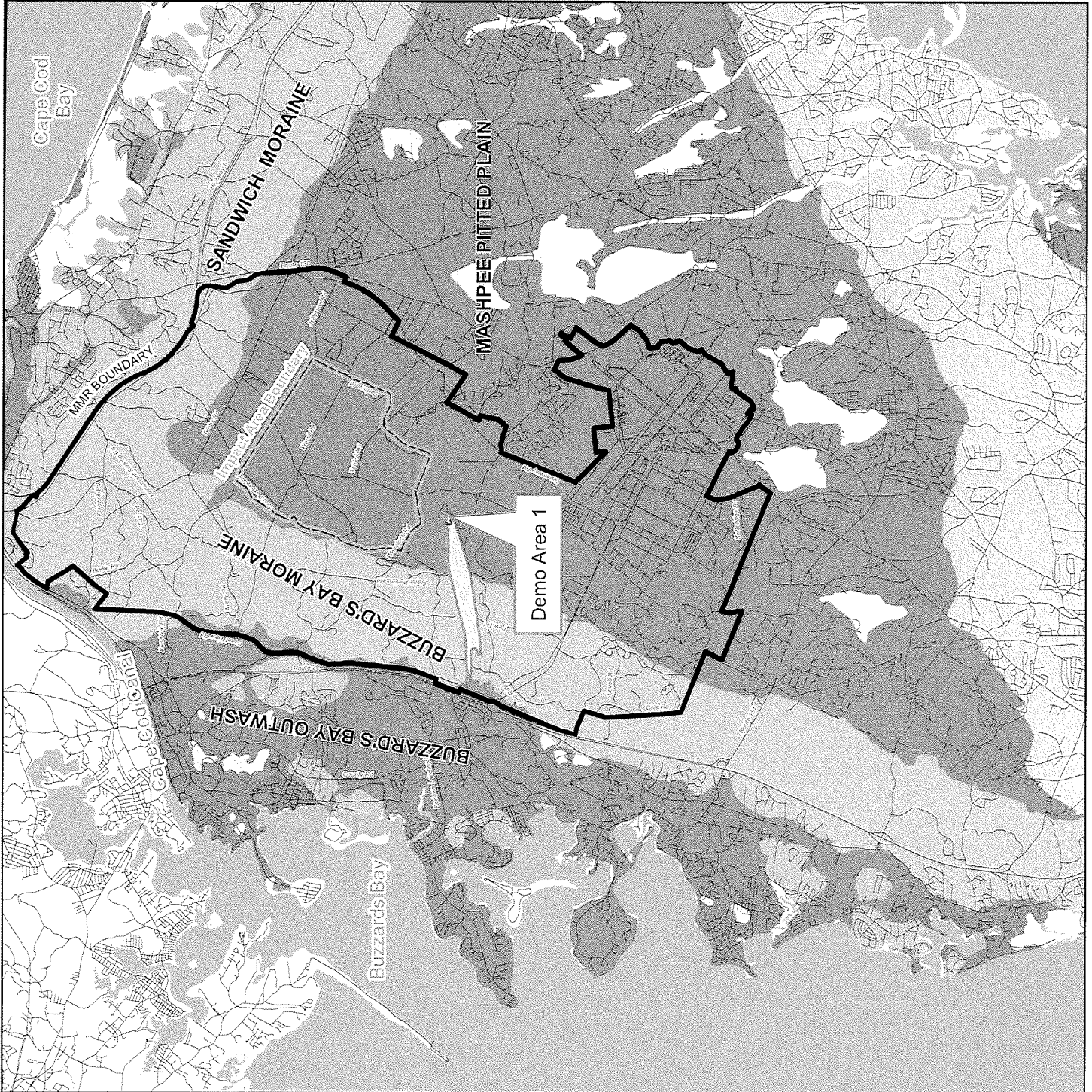
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 Westford, Massachusetts

FIGURE

8

US Dept. of the Interior, Bureau of Land Management, 1994a, Fig. 6, Table
 RCI, Dr. D. G. Beeson, 1993a, Fig. 18, 19
 G:\MARI_COE\wv\2006\09\24\0924_Fig_18.mxd
 January 12, 2005 DWN_JBB AP_CHD BK



APPENDIX A
MassDEP Letter of Concurrence



COMMONWEALTH OF MASSACHUSETTS
 EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
 DEPARTMENT OF ENVIRONMENTAL PROTECTION
 SOUTHEAST REGIONAL OFFICE
 20 RIVERSIDE DRIVE, LAKEVILLE, MA 02347 508-946-2700

MITT ROMNEY
 Governor

ROBERT W. COLLEDGE, Jr.
 Secretary

KERRY HEALEY
 Lieutenant Governor

ARLEEN O'DONNELL
 Commissioner

September 26, 2006

Ms. Susan Studlien
 Office of Site Remediation and Restoration
 U.S. Environmental Protection Agency,
 Region 1
 One Congress Street, Suite 1100
 Boston, Massachusetts 02114-2023

RE: BOURNE—BWSC-4-0037
 Massachusetts Military Reservation,
**Decision Document, Demolition Area 1
 Groundwater Operable Unit**, Concurrence

Dear Ms. Studlien:

The Massachusetts Department of Environmental Protection (the "MassDEP") has reviewed the document entitled "**Decision Document, Demolition Area 1 Groundwater Operable Unit**" (the "Demo-1 DD"), dated September 14, 2006. The Demo-1 DD presents the response action selected by the U.S. Environmental Protection Agency (USEPA) for the Demolition Area 1 groundwater operable unit, located on Camp Edwards at the Massachusetts Military Reservation (MMR), situated in Bourne, Cape Cod, Massachusetts. The response action was selected by the USEPA in accordance with Section 1431(a) of the Safe Drinking Water Act (SDWA) and USEPA Administrative Order No. SDWA-1-2000-0014 (AO3). In addition, the selected response action includes consideration of the clean up standards set forth under Massachusetts General Laws, M.G.L. c. 21E and 310 CMR 40.0000, the Massachusetts Contingency Plan (MCP). For the following reasons, the MassDEP concurs with the response action proposed in the Demo-1 DD.

Demolition Area-1 Source Area:

The source of the Demo-1 groundwater plume is an approximately 7.4 acre site located at Camp Edwards. This site was used from the mid 1970s to the late 1980s by the military for the destruction of munitions, demolition training and the destruction of various types of military ordnance using explosives. The predominant explosive compound used in munitions at the site is Royal Demolition Explosive (RDX), followed by 2,4,6 trinitrotoluene (TNT). Perchlorate, a water-soluble salt used as an oxidizer, is a component of some munitions, fireworks, rocket propellants, and pyrotechnics that were likely destroyed at Demolition Area 1. In 2005, Army/NGB performed a Rapid Response Action (RRA) to remove contaminated soil from the

This information is available in alternate format. Call Donald M. Gomes, ADA Coordinator at 617-556-1057. TDD Service - 1-800-298-2207.

MassDEP on the World Wide Web: <http://www.mass.gov/dep>

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source area of the Demo 1 groundwater plume. Soil was treated on-site by thermal desorption, which uses heat to separate contaminants from the soil and oxidize them. Approximately 27,000 tons of soil was excavated and treated or disposed of off-site.

Demolition Area-1 Groundwater Operable Unit:

The contaminants of concern (COCs) for the Demolition Area 1 groundwater operable unit include the explosive compounds RDX and TNT, and the propellants 2,4-dinitrotoluene (2,4-DNT), and perchlorate. Detections of RDX in the Demo 1 plume have ranged from the detection limit of 0.25 parts per billion (ppb) to 370 ppb. The lifetime federal health advisory (HA) for RDX in drinking water is 2 ppb. Perchlorate detections have ranged from the detection limit of 0.35 ppb to 500 ppb. The Massachusetts Maximum Contaminant Level (MMCL) and MCP Groundwater 1 (GW-1) standard for perchlorate is 2 ppb.

The Army/NGB performed a groundwater RRA in September of 2004 that was designed to remove contaminants from the aquifer and limit further migration of the plume while the comprehensive remedy could be selected and implemented. The groundwater RRA consists of two groundwater extraction wells, one at Frank Perkins Road and the other at Pew Road. Groundwater is pumped from these wells at 320 gallons per minute (gpm) to modular treatment units. The extracted groundwater is then treated with a combination of granular activated carbon (GAC) and ion exchange resin (IX) and returned to the aquifer via three reinjection wells.

The selected remedy for the Demolition Area 1 groundwater operable unit will be performed by the United States Army/National Guard Bureau (Army/NGB) and builds upon the existing RRA groundwater extraction, treatment, and reinjection (ETR) system. Groundwater modeling performed by the Army/NGB predicts that the proposed remedy will prevent significant further migration of the plume and restore the impacted portion of the aquifer for use as a public water supply, which has been designated a Sole Source Aquifer by the USEPA and a Potentially Productive Aquifer by the MassDEP. The response action will also remediate the contaminated groundwater containing RDX at concentrations greater than the 10^{-6} risk-based level (0.6 ppb) and perchlorate greater than the MMCL/GW-1 of 2 ppb.

As part of the selected remedy, Army/NGB will install three additional extraction wells to the existing RRA treatment system, for a total of five wells that will extract contaminated groundwater at 906 gpm. Groundwater will be treated to remove contaminants to below applicable federal and state drinking water standards and risk-based levels using GAC and IX. The treated water will be re-injected back into the aquifer using four injection wells.

The selected remedy relies on natural attenuation of the leading edge of the plume (located beyond the well furthest downgradient from the source area) to below applicable water-quality standards and risk-based levels. In addition, the Army/NGB will perform long-term monitoring through a network of approximately 103 groundwater monitoring well screens to track the extent and movement of the plume. Groundwater modeling predicts this remedy will prevent significant further migration of the plume and restore the impacted portion of the aquifer for use as a public water supply. However, the selected remedy also includes a contingency remedy for additional active measures to be taken to control migration of the plume if

contaminants migrate further than predicted by groundwater modeling performed by the Army/NGB. This contingency remedy will most likely include additional groundwater extraction and treatment near the leading edge of the plume if actual or modeled data at a well transect west of North Pond exceeds applicable federal/state regulatory or risk-based levels for COCs.

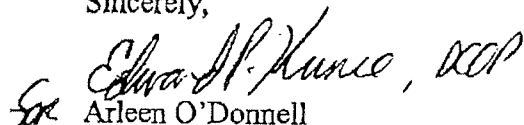
Furthermore, under the selected remedy, Army/NGB will implement administrative and/or legal controls known as land use controls (LUCs) to prevent access to or use of the groundwater from the Demo-1 plume until the groundwater no longer poses an unacceptable risk to human health. The Army/NGB will also annually monitor the environmental use restrictions and controls.

Based on the foregoing, the MassDEP concurs with the selected response action proposed in the Demo-1 DD. This concurrence is based upon representations made to the MassDEP by the Army/NGB and assumes that all information provided is substantially complete and accurate. Without limitation, if the MassDEP determines that any material omissions or misstatements exist, if new information becomes available, or if conditions at the Demo-1 groundwater operable unit change, resulting in potential or actual human exposure or threats to the environment, the MassDEP reserves its authority under M.G.L. c. 21E, and the MCP, 310 CMR 40.0000 et seq., and any other applicable law or regulation to require further response actions.

In addition, please be advised that the MassDEP reserves all rights against the Army/NGB and all other persons to take any civil, criminal, or administrative enforcement action pursuant to any available legal authority, including the right to seek injunctive relief; the recovery of money expended or to be expended (plus interest); monetary penalties; criminal sanctions; and/or punitive damages regarding any violation of M.G.L. c. 21E and the MCP, or any actual or potential threat to human health, safety, public welfare or the environment, or any release of hazardous substances on, at, in, or near the MMR. Nothing in this letter shall preclude the MassDEP from taking any additional enforcement actions, including the issuance of Orders and/or additional actions, as the MassDEP may deem necessary, or from requiring the Army/NGB in the future to perform additional activities pursuant to any other applicable law.

Please incorporate this letter into the Administrative Record for the Demo-1 groundwater operable unit. If you have any questions regarding this matter, please contact Leonard J. Pinaud, Chief of Federal Facilities Remediation Section, at (508) 946-2871 or Millie Garcia-Surette, Deputy Regional Director of the Bureau of Waste Site Cleanup at (508) 946-2727.

Sincerely,


Arleen O'Donnell
Acting Commissioner
Massachusetts Department of Environmental
Protection

AO/LP/

Demolition Area 1 DD concurrence letter

Cc: DEP - SERO

Attn: Gary S. Moran, Regional Director
Millie Garcia-Surette, Deputy Regional Director, BWSC
Leonard J. Pinaud, Chief, Federal Facilities Remediation Section, BWSC

Distributions: SERO

SMB

Plume Cleanup Team (IRP)

Boards of Selectmen

Boards of Health

Mark Begley, Environmental Management Commission

**APPENDIX B
REFERENCES**

APPENDIX B -- DEMOLITION AREA 1 REFERENCES

<u>Name</u>	<u>Creation Date</u>	<u>Type</u>	<u>Doc ID</u>
<u>Memorandum of Resolution on the 2005 System Performance and Ecological Monitoring (SPEIM) Report</u> <u>Rapid Response Action (RRA) Demo 1 Groundwater Operable Unit</u>	14-Mar-06	Letter	8471
<u>Demolition Area 1 Soil Rapid Response Action and Soil Operable Unit Closeout Report</u>	21-Dec-05	Report	8405
<u>Remedial Design-Demo 1 Groundwater Operable Unit, Frank Perkins Treatment Fac., Concurrence</u>	7-Dec-05	Letter	8433
<u>Final Completion of Work Report Rapid Response Action Systems Demo 1 Groundwater Operable Unit</u>	4-Nov-05	Report	8348
<u>Demo 1 Groundwater Operable Unit, Remedial Design Documents</u>	2-Nov-05	Letter	8440
<u>Draft 2005 System Performance and Ecological Impact Monitoring (SPEIM) Report</u>	28-Oct-05	Report	8345
<u>Memorandum of Resolution, Remedial Design Work Plan, Remedial Action, Demo 1 Groundwater Operable Unit</u>	26-Oct-05	Letter	8337
<u>Draft Completion of Work Report, RRA System, Demo 1 GW Operable Unit, Response to Comments, Concurrence</u>	13-Oct-05	Letter	8401
<u>Remedy Selection Plan for the Demolition Area 1 Groundwater Plume</u>	22-Aug-05	Plan	8288
<u>Final Technical Team Memorandum 01-17 Feasibility Study Demo 1 Groundwater Operable Unit</u>	19-Aug-05	Report	8285
<u>Response to EPA Comments (08/09/05) on the Revised Memorandum of Resolution (07/11/05) to the Revised Draft System Feasibility Study, Technical Memorandum (TM) 01-17, Demo 1 Groundwater Operable Unit</u>	10-Aug-05	Letter	8289
<u>Response to Comments on the Completion of Work Report, Rapid Response Action Systems, Demo 1 Groundwater Operable Unit</u>	3-Aug-05	Letter	8284
<u>Revised Memorandum of Resolution on the Revised Draft Feasibility Study, Technical Memorandum (TM) 01-17 Demo 1 Groundwater Operable Unit</u>	11-Jul-05	Letter	8273
<u>Final System Performance and Ecological Impact Monitoring (SPEIM) Plan Rapid Response Action Systems Demo 1 Groundwater Operable Unit</u>	6-Jan-05	Plan	8095
<u>Remedial Action, Demo 1 Groundwater Operable Unit, approval of RCL</u>	1-Dec-04	Letter	8434
<u>Memorandum of Resolution System Performance and Ecological Impact Monitoring Plan, Rapid Response Action Systems, Demo 1 Groundwater Operable Unit</u>	30-Nov-04	Letter	7969
<u>Final Groundwater Report Addendum to Technical Team Memorandum 01-2 Demo 1 Groundwater Operable Unit</u>	21-Apr-04	Report	5852
<u>MADEP Concurrence with the Memorandum of Resolution for the Draft Groundwater Report Addendum to Technical Memorandum 01-2, Demo 1 Groundwater Operable Unit</u>	7-Apr-04	Letter	6195
<u>Memorandum of Resolution for the Draft Rapid Response Action Plan Demolition Area 1 (Demo 1) Groundwater Operable Unit</u>	2-Apr-04	Letter	7238
<u>Memorandum of Resolution for the Draft Groundwater Report Addendum to Technical Memorandum 01-2, Demo 1 Groundwater Operable Unit</u>	23-Feb-04	Letter	6196
<u>Response to Comment Letter on the Rapid Response Action Plan Demo 1 Groundwater Operable Unit</u>	6-Nov-03	Letter	4723

<u>DEP comments to the Draft appendix E, Sampling and Analysis plan - Demo 1, Response to comments, Concurrence</u>	4-Nov-03	Letter	5382
<u>Bourne-BWSC-4-15031 Massachusetts Military Reservation, Rapid Response Action, Demo-1 Groundwater Operable Unit, Comments/Approval</u>	23-Sep-03	Letter	5475
<u>EPA Conditional Approval with Required Modifications of the Revised Draft Rapid Response Action (RRA) Plan, Demolition Area 1 Groundwater Operable Unit</u>	2-Sep-03	Letter	5476
<u>Adequate delineation at Demo area 1 groundwater operable unit Camp Edwards impact area</u>	6-May-03	Letter	5044
<u>EPA Conditional approval with Required Modifications of the Draft Rapid Response Action/Release Abatement Measure Plan, demolition area 1 Groundwater Operable Unit</u>	11-Feb-03	Letter	5356
<u>Draft Rapid Response Action / Release Abatement Measure (RRA/RAM) Plan, Demo 1 Groundwater Operable Unit</u>	21-Jan-03	Plan	4015
<u>DEP comments on the Draft technical team Memorandum 01-17, Feasibility study report, Demo 1 groundwater operable unit - MOR, Concurrence</u>	7-May-02	Letter	6205
<u>MOR for the Draft Technical Team Memorandum 01-17, Feasibility Study Report, Demo 1 Groundwater Operable Unit</u>	2-May-02	Letter	6043
<u>Response to Comments on the Draft IAGWSP Technical Team Memorandum 01-17, Feasibility Study Report, Demo 1 Groundwater Operable Unit</u>	10-Dec-01	Letter	6063
<u>MADEP Comments on the Draft Technical Team Memorandum 01-17 Feasibility Study Report, Demo 1 Groundwater Operable Unit</u>	20-Nov-01	Letter	6064
<u>USEPA region I Administrative Orders SDWA 1-97-1019 & 1-2000-001 BOURNE -BWSC-4-13683 Camp Edwards impact area groundwater study program Delineation plan, downgradient extent of contamination, demo 1 groundwater operable unit</u>	16-Nov-01	Letter	5046
<u>Draft IAGWSP Technical Team Memorandum 01-17, Feasibility Study Report, Demo 1 Operable Groundwater Unit, Administrative Order SDWA 1-2000-0014</u>	31-Oct-01	Letter	6065
<u>Revision to Transport Modeling Simulations in the Draft IAGWSP Technical Team Memorandum 01-17 Feasibility Study Report Demo 1 Groundwater Operable Unit</u>	26-Oct-01	Letter	6066
<u>Tech Team Memo 01-17 Draft Feasibility Study Report, Demo 1 Groundwater Operable Unit Memorandum of Resolution for the Draft Contaminant of Concern Identification, Demo Area 1 Letter with the Final Technical Team Memorandum 01-2, Demo 1 Groundwater Report</u>	1-Oct-01	Report	828
<u>IAGWSP Technical Team Memorandum 01-2, Demo 1 Groundwater Report</u>	10-May-01	Letter	5204
<u>Impact Area Groundwater Study MOR for the Draft IAGWSP Technical Team Memorandum 01-5, Development and initial screening of alternatives report, Demo 1</u>	19-Apr-01	Letter	6200
<u>Memorandum of Resolution for the Draft IAGWSP Technical Team Memorandum 01-2, Demo 1 Groundwater Report</u>	19-Apr-01	Report	3924
<u>IAGS Technical Team Memorandum 01-5 Development and Initial Screening of Alternatives Report</u>	12-Apr-01	Letter	6154
<u>Draft TM 01-2, Demo 1 GW Report</u>	21-Mar-01	Letter	6179
<u>COC Identification, Demo 1 - Groundwater Operable Unit</u>	31-Jan-01	Report	2753
<u>IAGS TECHNICAL TEAM MEMORANDUM 00-2 DEMO 1 RESPONSE PLAN INVESTIGATION</u>	18-Jan-01	Report	666
	5-Dec-00	Report	664
	7-Jun-00	Report	7512

APPENDIX C
GLOSSARY OF TERMS AND ACRONYMS

**APPENDIX C
GLOSSARY OF TERMS AND ACRONYMS**

2A-DNT	2-amino-4,6-dinitrotoluene, a breakdown product of the explosive TNT
4A-DNT	4-amino-2,6-dinitrotoluene, a breakdown product of the explosive TNT
2,4-DNT	2,4-dinitrotoluene, a propellant
AFCEE	U.S. Air Force Center for Environmental Excellence
AO	Administrative Order
AOC	Area of Concern
Background	A background level is the concentration of a hazardous substance that represents the level of the substance in an undisturbed environmental setting at or near the site.
BBM	Buzzards Bay Moraine
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
COC	Contaminant of Concern
DD	Decision Document; summarizes the selected comprehensive remedy
Demo 1	Demolition Area 1
DWEL	Drinking Water Equivalent Level
EPA	United States Environmental Protection Agency
EPS	Environmental Performance Standards
ETR	Extraction/Treatment/Reinjection
EW-D1-X	Extraction Well at Demo 1 where X is replaced by the well number
FS	Feasibility Study
ft	feet
GAC	Granular Activated Carbon; used in the treatment of contaminated water
gpm	gallons per minute; unit of measure for liquid flow per unit time
HA	Health Advisory; EPA guidelines that represent the concentration of a chemical in drinking water that, given a lifetime of exposure, is not expected to cause adverse, non-cancerous, effects.

HMX	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine, an explosives compound
IAGWSP	Impact Area Groundwater Study Program
IART	Impact Area Review Team
IRP	Installation Restoration Program
IW-D1-X	Injection Well at Demo 1 where X is replaced by the well number
IX	Ion exchange resin; used in the treatment of contaminated Water
kettle hole	a depression that in the ground surface that was formed during the last ice age from the melting of a remnant glacial ice block
kg	kilogram; unit of measure for mass
Lifetime Health Advisory	Guideline established by EPA that represents the concentration of a chemical in drinking water that, given a lifetime of exposure, is not expected to cause adverse, non-cancerous effects
LUC	Land Use Control
lb	pound; unit of measure for weight
MassDEP	Massachusetts Department of Environmental Protection
MANG	Massachusetts National Guard
mg	milligram; unit of measure for mass
mg/kg/day	milligram of substance per kilogram of bodyweight per day of consumption
MCL	Maximum Contaminant Level
MMR	Massachusetts Military Reservation
NCP	National Contingency Plan
NEPA	National Environmental Policy Act
OU	Operable Unit
O&M	Operation and Maintenance
oxidizer	A substance that gives up oxygen easily to stimulate combustion of organic material

perchlorate	A water-soluble salt used as an oxidizer
ppb	parts per billion, a measure of concentration in liquid, e.g. one part of contaminant in one billion parts of water is 1 ppb, or 1 microgram per liter
RDX	Hexahydro-1,3,5-trinitro-1,3,5-triazine / Royal Demolition Explosive, an explosive compound
RRA	Rapid Response Action, an interim cleanup action taken to reduce contamination while the investigation and selection, design and implementation of a comprehensive cleanup plan is completed
RSP	Remedy Selection Plan, the plan outlining the cleanup alternatives and the proposed plan
SDWA	Safe Drinking Water Act
TNT	Trinitrotoluene, an explosives compound
TTU	Thermal Treatment Unit; a system that uses heat to remove contaminants from soil
UXO	Unexploded Ordnance

APPENDIX D
ON-BASE PROHIBITION ON NEW DRINKING WELLS



DEPARTMENT OF THE ARMY
US ARMY ENVIRONMENTAL CENTER
IMPACT AREA GROUNDWATER STUDY PROGRAM OFFICE
1803 WEST OUTER ROAD
CAMP EDWARDS, MA 02542-5003

SFIM-AEC-IA

28 September 2006

MEMORANDUM FOR

COL Steven E. Wujciak, Commander, ARNG Training Site, Bldg. 3468, Camp Edwards, MA 02542

COL Paul G. Worcester, Commander 102d Fighter Wing, Bldg. 158, Otis ANGB, MA 02542

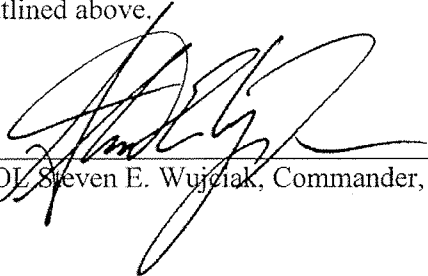
SUBJECT: Land Use Controls for Demolition Area 1

1. The Decision Document for the Demolition Area 1 (Demo 1) groundwater operable unit requires Land Use Controls that prevent or reduce exposure to contaminated groundwater associated with Demo 1 and to protect remediation infrastructure.
2. The Demo 1 contaminated groundwater plume and the related groundwater treatment infrastructure are located on Camp Edwards (see attached map). In order to ensure this groundwater is not used for drinking water purposes, you, and the other component commanders on the MMR, have established a prohibition against any new drinking water wells serving 25 or fewer customers (attached). Drinking water wells that service more than 25 customers are regulated through the Massachusetts Department of Environmental Protection's permitting process. This prohibition has been provided to the Facilities Management Office, Base Civil Engineering and Environmental Management Offices for Camp Edwards and the 102d Fighter Wing as appropriate, where it will be used for facility and land use planning activities per Air National Guard Instruction (ANGI) 32-1003, Facilities Board; Army National Guard Regulation 210-20, Real Property Development Planning for the Army National Guard; and Commandant Instruction Manual 11010.14, Shore Facility Project Development Manual.
3. Another key element of the Land Use Controls is the continued implementation of the Dig Safe and Dig Permit processes used by MMR components and tenants to ensure that cleanup infrastructure is not damaged. Your staff's continued diligence in using the established program is required to ensure the viability of this Land Use Control.
4. Since these Land Use Controls are a part of the Demo 1 remedy, we request your acknowledgement of this transmittal. Any comments or questions regarding this issue can be directed to me at (508) 968-5107.

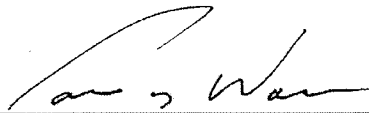
KENT R. GONSER
Program Manager

Acknowledgement

The Massachusetts Army National Guard acknowledges the Land Use Control requirements as outlined above.


COL Steven E. Wujciak, Commander, Camp Edwards 5 OCTOBER 2006
Date

The 102d Fighter Wing acknowledges the Land Use Control requirements as outlined above.


COL Paul G. Worcester, Commander, 102d Fighter Wing 12 October 2006
Date

Attachments:

MMR Prohibition on Drinking Water Wells Serving 25 or Fewer Customers (August 2006)
Demo 1 Groundwater Operable Unit Plume Map

cc:

MANG FMO
MANG E&RC
102d BCE
102d EMO

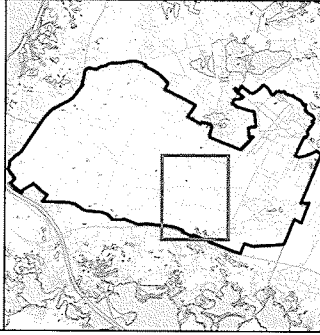
**Impact Area
Groundwater Study Program**

LEGEND

- Existing Monitoring Well
- Piezometer
- ⊙ Staff Gauge
- ⊖ Extraction Well
- ▲ Injection Well
- Treatment System Piping
- ▭ Treatment System
- ▨ Treatment System Access
- ▨ Extent of Perchlorate and RDX Plumes

Note: Plume sites illustrated is representative of vadose observed and groundwater data through April 2006. Contour lines dashed where inferred.

LOCATION MAP



NOTES & SOURCES

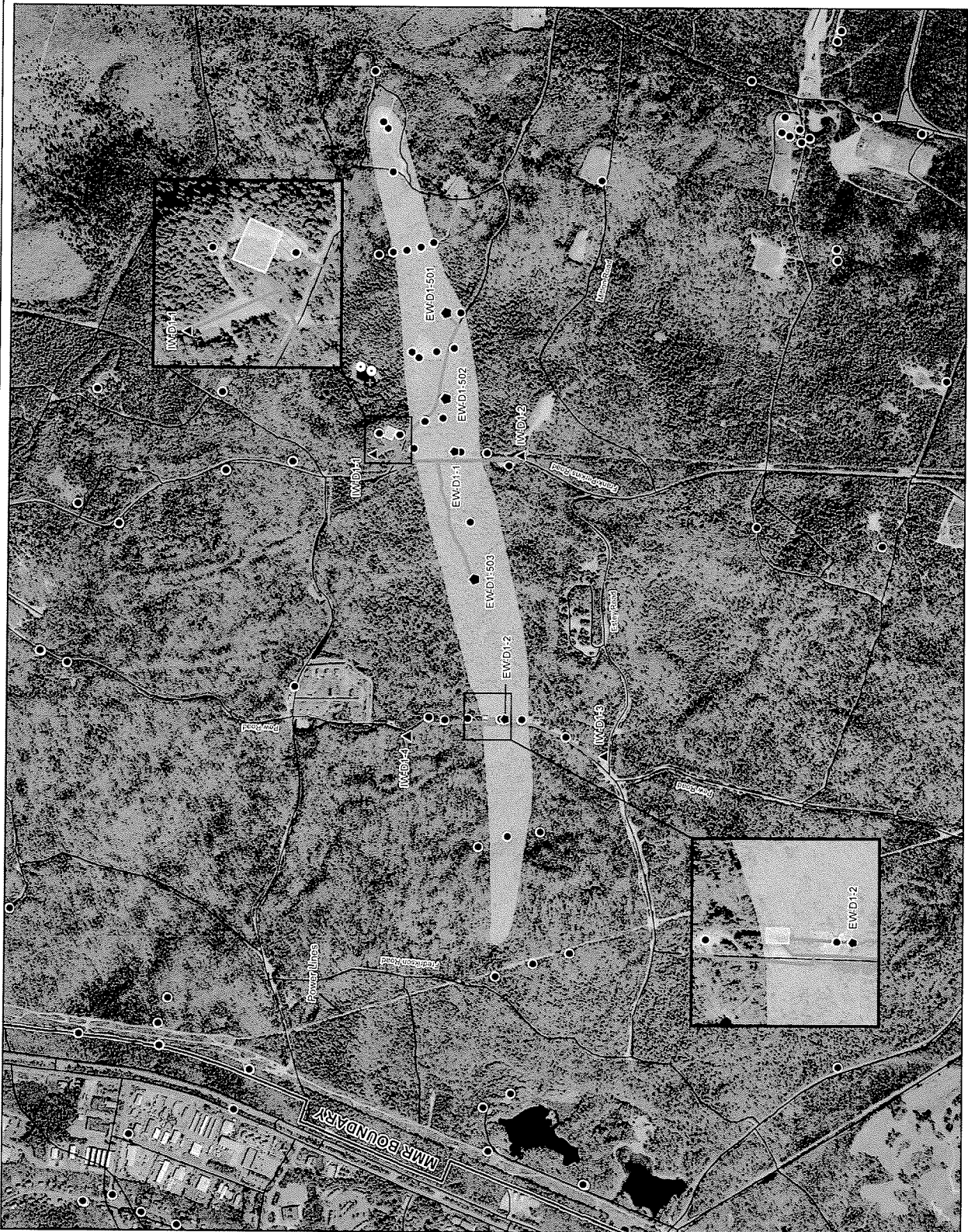
Basemap data from US Geological Survey 7 1/2 minute Topographic Maps. Source: MassGIS
 Date: February 2002. Source: EarthData International

TITLE

**Demo 1
Groundwater Treatment Infrastructure**



DRAFT



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