

September 26, 2016

Mr. Robert Simeone, BEC BRAC Environmental Office, DAIM-BO-A-DV 30 Quebec St., Bldg 666, Box 100 Devens, MA 01434

Re: Fourth Five-Year Review Report (2011-2016) for the Former Ft. Devens-Sudbury Training Annex

Dear Mr. Simeone:

This office is in receipt of the Army's Fourth Five-Year Review Report for the former Ft. Devens-Sudbury Training Annex, dated September 2016. EPA reviewed the report for compliance with the *Comprehensive Five-Year Review Guidance* (OSWER Directive No. 9355.7-03B-P dated June 2001). The report discusses all five (5) operable units (OUs) at the Site and makes a protectiveness statement for one of those operable units, OU1 (AOC A7-Old Gravel Pit Landfill and AOC A9 Petroleum Oil and Lubricant Burn Area) Source Area Control ROD. The protectiveness statement is required for OU1 only because hazardous substances, pollutants or contaminants remain at OU1.

The 1995 Source Area Control ROD selected remedy addresses soil risk from the contaminants of concern at AOCs A7 and A9 by eliminating or reducing the risks posed by the presence of the landfill at AOC A7 and the contaminated soils at AOC A9. The major components of the selected remedy for AOCs A7 and A9 include:

- Excavation and off-site treatment and disposal of laboratory waste at AOC A7
- Excavation of contaminated soil from AOC A9 and consolidation at AOC A7
- Consolidation of contaminated soil and solid waste at AOC A7 to within the limits of the landfill cap
- Construction of a Resource Conservation and Recovery Act (RCRA) Subtitle C landfill cap at AOC A7
- Long Term Groundwater Monitoring (LTM) and Operations and Maintenance at AOC A7
- Land Use Controls (LUCs) at AOC A7 to limit future site use and to restrict site access
- Five-year reviews at AOC A7 only

The 1997 OU2 Management of Migration ROD selected No Further Action for the groundwater at the two AOCs and continued the LTM and O&M at AOC A7.

EPA concurs with the protectiveness statement for OU1, which states that the remedy at OU1 currently protects human health and the environment because the landfill is capped and the groundwater is not being used as a drinking water supply at any of the AOCs. However, in order for the remedy to be protective in the long term, the following actions need to be taken by the Army prior to the March and September 2017 milestone dates established in the Five-Year Review Report:

- 1. Implement temporary ICs to ensure the WSW at AOC A9 is not used until a groundwater investigation is completed. If the groundwater poses unacceptable risk revise existing ICs to insure that additional water supply wells are not installed in the future.
- 2. Remove Hornet nests in the gas vents prior to next sampling round in 2016. Report the data in accordance with the LTMMP.
- 3. The well SUDWP-A7-01 will be redeveloped prior to sampling in 2016. At that time it should be determined if a new well should be installed at a deeper depth or sampling should occur during times of a higher water table.
- 4. Prepare a sampling and analysis plan and implement groundwater sampling for emerging contaminants including perchlorate, 1,4 dioxane, and PFAS, at AOCs A7 and A9 to determine if these contaminants are currently impacting groundwater at AOCs A7 and A9.
- 5. Prepare and implement a PA work plan across the entire site to determine if PFAS had been used, stored, or disposed of at any other areas of the site in addition to AOCs A7 and A9.
- 6. Prepare a work plan to evaluate groundwater and determine if historical impacts above the MCLs are present and if overburden groundwater could affect the USFWS water supply well currently or in the future.

The Army must determine if additional institutional controls are needed due to presumed and/or demonstrated overburden groundwater contamination. Depending on the outcome of the investigation, the OU1 ROD may need to be amended to include LUCs, groundwater monitoring, cleanup, and Five Year Reviews.

Land use controls play a key role in EPA's determination that an OU is protective. Army must ensure that those institutional controls that are in place at the Ft. Devens Sudbury Training Annex remain effective until such time that they are no longer necessary and that the remedies in place are protective over the long-term.

This fourth five-year review was triggered by the third five year review, completed in September 2011. Consistent with Section 121(c) of CERCLA, the next Five-Year Review must be finalized by September 26, 2021.

Sincerely,

Bryan Olson, Director Office of Site Remediation and Restoration

cc: Anni Loughlin, EPA-New England Ginny Lombardo, EPA-New England Christine Williams, EPA-New England Monica McEaddy, EPA HQ David Chaffin, MassDEP

2016 FIVE-YEAR REVIEW REPORT

for Former Sudbury Training Annex Sudbury, Massachusetts

Contract No.: W912WJ-15-C-0002

Prepared for:



Army Base Realignment and Closure Division

U. S. Army Garrison Fort Devens



U.S. Army Corps of Engineers New England District Concord, Massachusetts

September 2016

2016

FIVE-YEAR REVIEW REPORT for Former Sudbury Training Annex Sudbury, Massachusetts

Contract No.: W912WJ-15-C-0002

Prepared for Former Fort Devens Army Installation Devens, Massachusetts

Prepared by KOMAN Government Solutions, LLC 160 East Main Street, Suite 2F Westborough, MA 01581

Robert J. Simeone BRAC Environmental Coordinator – Devens Army Base Realignment and Closure Division

September 26, 2016

Date

September 2016

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KOMAN Government Solutions, LLC September 2016

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AOC	area of contamination
ARAR	Applicable or Relevant and Appropriate Requirements
Army	U.S. Army
-	
BCT	BRAC Cleanup Team
bgs	below ground surface
BRAC	Base Realignment and Closure
BTEX	benzene, toluene, ethylbenzene, and xylenes
	Comprehensive Environmental Despense. Companyation and Liability Act
CERCLA	Code of Federal Populations
crk	cis 1.2 dichloroothono
CMP	Code of Massachusetta Degulations
CMR	conteminants of concern
COD	containinants of concern chamical average demand
COPC	contaminants of notantial concorn
COPC	Comprehensive Site Assessment
CSA	comprehensive Site Assessment
CSM	conceptual site model
	chiomated volatile organic compound
Cy	cubic yards
1,2-DCB	1,2-dichlorobenzene
1,3-DCB	1,3-dichlorobenzene
1,4-DCB	1,4-dichlorobenzene
1,1-DCE	1,1-dichloroethene
ססס	dishlans din banyıl dishlana etbana
	dichlorodiphenyldichloroethalene
DDE	dichlorodiphenylaichloroethylene
	Massachusetta Department of Fire Services
DL2	dissolved everyon
	Department of Defense
	Department of Defense Defense Doutilization and Markating Office
DRIVIO	Defense Reutilization and Marketing Office
EPH	extractable petroleum hydrocarbons
EPP	Environmental Protection Plan
ERA	Ecological Risk Assessment
ESD	Explanation of Significant Differences
٥E	degrees Fahrenheit
FEMA	Federal Emergency Management Agency
FFA	Federal Facility Agreement
FFS	focused feasibility study
FORSCOM	United States Army Forces Command
TURSCOM	United States Army Forces Command

Fort Devens	Former Fort Devens Army Installation
FR	Federal Register
FS	feasibility study
ft	feet
ft/day	feet per day
gpm	gallons per minute
GW-1	Groundwater Classification 1
GW-3	Groundwater Classification 3
HASP	Health and Safety Plan
Hg	mercury
HGL	HydroGeoLogic, Inc.
HI	hazard index
H&S	H&S Environmental, Inc.
IC	institutional controls
IDW	investigation-derived waste
IMP	Installation Master Plan
IRP	Installation Restoration Program
ITRC	Interstate Technology and Regulator Council
LEL	lower explosive limit
LTM	long-term monitoring
LTMP	Long-Term Monitoring Plan
LTMMP	Long-Term Monitoring and Maintenance Plan
LUC	land-use control
LUCIP	land use control implementation plan
μg/L	micrograms per liter
MassDEP	Massachusetts Department of Environmental Protection
MassDevelopment	Massachusetts Development and Finance Agency
MCL	maximum contaminant level
MCP	Massachusetts Contingency Plan
MDCR	Massachusetts Department of Conservation and Recreation
MEC	Munitions and Explosives of Concern
MEP	Master Environmental Plan
mg/L	milligrams per liter
MOM	management of migration
msl	mean sea level
mV	millivolt
NAE	North Atlantic Division, New England District
NCP	National Oil and Hazardous Substances Contingency Plan

NFA	No Further Action
NIA	Northern Impact Area
NPL	National Priorities List
0&M	operations and maintenance
OF	ordnance and explosives
OPP	ovidation reduction potential
OKI	oxidation-reduction potential
%	percent
PAH	polynuclear aromatic hydrocarbons
PCB	polychlorinated biphenyl
PCE	Tetrachloroethene
PFAS	Per- and Polyfluoroalkyl Substances
PFC	Perfluorinated Chemicals
PFOA	Perfluorooctanoic Acid
POL	petroleum, oils, and lubricants
PP	Proposed Plan
ppb	parts per billion
ppm	parts per million
ppmv	parts per million by volume
PCC	Post-closure care
PRE	Preliminary Risk Evaluation
PRP	Potentially Responsible Parties
PVC	polyvinyl chloride
RAB	Restoration Advisory Board
RAGS	Risk Assessment Guidance for Superfund
RAO	remedial action objectives
RAWP	Remedial Action Work Plan
RCRA	Resource Conservation and Recovery Act
RDX	cyclotrimethylenetrinitramine
RG	remedial goal
RI	remedial investigation
ROD	Record of Decision
RPMP	Real Property Master Plan
SA	study area
SAP	Sampling Analysis Plan
SARA	Superfund Amendment and Reauthorization Act
SC	source control
SI	Site Investigation
SSI	Supplemental Site Investigation
SVOC	semi-volatile organic compound
SWETS	Stone and Webster Environmental Technology & Services

TAL	target analyte list		
TBC	To Be Considered		
TCE	trichloroethene		
TCL	Target Compound List		
TCLP	toxicity characteristic leaching procedure		
TDA	Table of Distributions and Allowances		
TRC	Technical Review Committee		
USACE	U.S. Army Corps of Engineers		
USAEC	U.S. Army Environmental Command		
USAEHA	U.S. Army Environmental Hygiene Agency		
USAR	U.S. Army Reserve		
USAF	U.S. Air Force		
USEPA	U.S. Environmental Protection Agency		
USFWS	U.S. Fish and Wildlife Services		
UU/UE	unlimited use/unrestricted exposure		
VOC	volatile organic compound		

EXECUTIVE SUMMARY

KOMAN Government Solutions (KGS) has prepared this comprehensive Five-Year Review of the remedial actions for the former Sudbury Annex (Annex) Area of Contamination (AOC) A7. This review, which was completed in accordance with the U.S. Environmental Protection Agency (USEPA) Comprehensive Five-Year Review Guidance, dated June 2001, was performed from January 2016 through June 2016. This is the fourth comprehensive Five-Year Review performed for the former Sudbury Annex. The previous Five-Year Review was completed in September 2011.

The purpose of Five-Year Review is to evaluate the implementation and performance of a remedy to determine if the remedy continues to, or will meet, the remedial action objectives specified in the ROD and are, or will be, protective of human health and the environment. In addition, Five-Year Review reports identify issues, if any, found during the review, and identify recommendations to address them.

This review is required by statute and is being implemented consistent with CERCLA and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). Five-Year Reviews are conducted by statute if both the following conditions are true:

- Upon completion of the remedial action, hazardous substances, pollutants, or contaminants will remain on site; and
- The Record of Decision (ROD) for the site (or sites for a multiple site Five-Year Review) was signed on or after October 17, 1986 [the effective date of the Superfund Amendment and Reauthorization Act (SARA)] and the remedial action was selected under CERCLA Section 121.

The former Sudbury Annex occupies approximately 2,300 acres in the Middlesex County, Massachusetts. The Annex was deleted from the NPL in January 2002, and the US Fish and Wildlife Service (USFWS), the US Air Force (USAF), the Federal Emergency Management Agency (FEMA), the Massachusetts Department of Conservation and Recreation (MDCR), and the Massachusetts Department of Fire Services (DFS) currently control the land.

The remedy for the Annex included excavation of contaminated soil at AOC A9 and offsite disposal and placement of this soil under a Resource Conservation and Recovery Act (RCRA) cap at AOC A7. While the 1997 ROD was a no further action decision, the 1995 ROD stipulates long term groundwater monitoring. Therefore, the focus of this Five-Year Review is the state of protectiveness of the ROD remedies. The 1995 ROD included the following remedial action objectives for A7:

- Eliminate potential risk to human health and the environment associated with exposure to contaminated wastes,
- Minimize off-site migration of contaminants, and
- Limit infiltration of precipitation to the underlying waste within the landfill area, thereby minimizing leachate generation and groundwater degradation.

The 1995 ROD AOC A9 RAO remedy is to reduce potential risk to human health associated with exposure to contaminated soil.

During the period under review, AOC A7 was subject to operation and maintenance inspections of the landfill cap, landfill gas vent monitoring, groundwater sampling and analysis, and water level monitoring. Land Use Controls (LUCs) and in place at the former Sudbury Annex ensure protectiveness of the remedy from adjacent landowners and involved entities. The LUCs for AOC A7 include a perimeter fence around the landfill cap area and the prohibition of groundwater used as drinking water.

2016 Five-Year Review Report Former Sudbury Training Annex BRAC Legacy Sites

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Institutional Controls (ICs) required by the 1995 ROD are described in the memorandums of agreement (MOAs) between the US Army and current property owners.

The ICs for AOC A7 include prohibiting the use of site groundwater as drinking water, eliminating ingestion of groundwater exposure pathways, The land use at AOC A7 has not changed from the wildlife refuge use evaluated prior to the ROD and is not expected to change. There are provisions in the Memorandum of Agreement (MOA) between the Army and the USFWS dated 28 September 2000 (*Weston 2001*) allowing for the Army to conduct remedial actions at the former Annex. In general, but in particular, the AOC A7 landfill site is protected by Clause C8 from tampering, described as surface application of water, the use of groundwater, disturbing the parcel by earthworks that would negatively affect any response actions or jeopardize the remedy, activities that might impede the function of the containment design, or any unauthorized work that might be done without the consent of EPA and the Army on the landfill cap itself.

An addendum to the MOA prepared in 1999 included ICs at AOC P31 and AOC P58, areas where unauthorized dumping occurred, to monitor for significant changes in site use and increases in exposure potential. Other site-wide ICs across the former Sudbury Annex include annual reviews to confirm no land use changes, no activities have occurred to disturb the landfill system at AOC A7, no subsurface soil disturbance greater than four feet site deep , no negative impacts to monitoring network at AOC A7 and P58, and no disposal or disturbances at P31 and P58.

The remedy at OU1 currently protects human health and the environment because the landfill is capped and the groundwater is not being used as a drinking water supply at any of the AOCs. However, in order for the remedy to be protective in the long term, the following actions need to be taken:

1. Prepare a sampling and analysis plan and implement groundwater sampling for emerging contaminants including perchlorate, 1,4dioxane, and PFAS, at AOCs A7 and A9 to determine if these contaminants are currently impacting groundwater at AOCs A7 and A9.

2. Prepare and implement a PA work plan across the entire site to determine if PFAS had been used, stored, or disposed of at any other areas of the site in addition to AOCs A7 and A9.

3. Prepare a work plan to evaluate groundwater and determine if historical impacts above the MCLs are present and if overburden groundwater could affect the USFWS water supply well currently or in the future.

4. Implement temporary ICs to ensure the WSW at AOC A9 is not used until a groundwater investigation is completed. If the groundwater poses unacceptable risk revise existing ICs to insure that additional water supply wells are not installed in the future.

5. Remove Hornet nests in the gas vents prior to next sampling round in 2016. Report the data in accordance with the LTMMP.

6. The well SUDWP-A7-01 will be redeveloped prior to sampling in 2016. At that time it should be determined if a new well should be installed at a deeper depth or sampling should occur during times of a higher water table. This determination will be made in a technical memo submitted in March 2017.

Contaminants detected in groundwater continue to show downward trends at AOC A7. The landfill at AOC A7 remains in good condition and continues to function as intended by the 1995 ROD. Some

recommendations regarding continued preventative maintenance of the landfill and optimizations to the Long-Term Monitoring Program have been included but do not affect protectiveness. The Five-Year Report Summary Form is included as **Table 1**.

Table 1

Five Year Review Summary Form					
SITE IDENTIFICATION					
Site Name: Fo	Site Name: Former Fort Devens Sudbury Training Annex				
EPA ID: M	AD98052	0670			
Region: 1	Region: 1 State: MA City/County: Sudbury/Middlesex				
		SITE STATUS			
NPL Status: Del	eted				
Multiple OUs? Yes		Has the site achieved construction completion? Yes			
		REVIEW STATUS			
Lead agency: Other Federal Agency If "Other Federal Agency" was selected above, enter Agency name: U.S. Army Base Realignment and Closure (BRAC) Environmental Office, Devens, MA					
Author name (Federal or State Project Manager): Robert J. Simeone					
Author affiliation: BRAC Environmental Coordinator					
Review period: January 2016 - June 2016					
Date of site inspection: November 2, 2015, November 18, 2015 and March 25, 2016					
Type of review: Statutory					
Review number: 4					
Triggering action date: 09/15/2011					
Due date (five years after triggering action date): 09/26/2016					

Table 1					
Issues and Recommendations Identified in the Five-Year Review:					
AOC A7 and A9	Issue Category: Monitoring				
	1. A water supply well was installed by USF&WS at AOC A9, an area that previously had contamination. The institutional controls should prevent these actions from occurring in the future if the groundwater is determined to pose an unacceptable risk. The institutional controls for groundwater should be evaluated and modified if necessary.				
	2. Hornet nests are blocking gas vents so they cannot be sampled. The ga vents need to be cleaned and the sampled in accordance with the LTMMP.				
	3. Well SUDWP-A7-0l contained insufficient water to conduct sampling in 2015. The monitoring plan should be evaluated to determine if this well should be replaced.				
Recommendations:					
	the WSW at AOC ompleted.	A9 is not used			
2. Remove Hornet nests in gas vents prior to next sampling r and report data in accordance with the LTMMP.				ng round in 2016	
	3. The well SUDWP-A7-01 will be redeveloped prior to sampling in 2016. At that time it should be determined if a new well should be installed at a deeper depth or sampling should occur during times of a higher water table A technical memo will be submitted with Army's recommendation.				
Affect Current	Affect Future	Implementing	Oversight Party	Milestone Date	
Protectiveness	Frotectiveness	rarty			
No	yes	Army	EPA and MADEP	March 2017	

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Table 1					
Issues and Recommendations Identified in the Five-Year Review:					
AOC A7 and A9	Issue Category: Monitoring				
	Issues:				
	4. The emerging c (PFAS), Perchlora A7 and AOC A9.	contaminants, Per- a ite, and 1,4-dioxane	nd Polyfluoroalkyl may have been disp	Substances posed of at AOC	
5. In addition, PFAS may have been used at other areas of the site Impacts from these contaminants must be evaluated to determine is additional actions are warranted.					
	6. Contaminants in groundwater at AOC A9 were above MCLs at the time of the 1997 OU2 Management of Migration ROD. The current concentrations of contaminants in groundwater are not know. A water supply well was installed by USF & WS at AOC 9 and it is unknown if thi well is being impacted by current conditions or could be impacted in the future if used. The current extent of contamination should be characterized and current and future impacts to this water supply well should be evaluated to determine if the well should be utilized				
	Recommendation:				
4. Prepare and implement a sampling and analysis plan and im groundwater sampling for emerging contaminants, including p 1,4 dioxane and PFAS at AOC A7 and A9 to determine if thes contaminants are currently impacting groundwater at AOC7 ar				nd implement ing perchlorate, f these C7 and A9.	
	 5Prepare and implement a PA work plan to determine if PFAS had been used, stored, or disposed of at any other areas of the site in addition to AOC7 and A9. 6. Prepare and implement a work plan to evaluate groundwater at AOC A9 and determine if historical impacts above the MCLs are present and if overburden groundwater could affect the USFWS water supply well currently or in the future. If the groundwater exhibits unacceptable risk revise existing ICs to insure that additional water supply wells are not installed in the future. 				
Affect Current Protectiveness	Affect Future Protectiveness	Implementing Party	Oversight Party	Milestone Date	
No	yes	Army	EPA and MADEP	September 2017	

Table 1, continued				
Five Year Review Summary Form				

Protectiveness Statement(s)					
Former Sudbury Annex	Protectiveness Determination: Short-term Protective	Addendum Due Date (if applicable): N/A			
Protectiveness Statemer	nt:				
The remedy at OU1 currently protects human health and the environment because the landfill is capped and the groundwater is not being used as a drinking water supply at any of the AOCs. However, in order for the remedy to be protective in the long term, the following actions need to be taken: 1. Implement temporary ICs to ensure the WSW at AOC A9 is not used until a groundwater investigation is completed.					
2. Remove Hornet nests with the LTMMP.	in gas vents prior to next sampling ro	ound in 2016 and report data in accordance			
3. The well SUDWP-A7-01will be redeveloped prior to sampling. At that time it should be determined if a new well should be installed at a deeper depth or sampling should occur during times of a higher water table. A technical memo will be submitted with Army's recommendation.					
4. Prepare and implement a sampling and analysis plan and implement groundwater sampling for emerging contaminants, including perchlorate, 1,4 dioxane and PFAS at AOC A7 and A9 to determine if these contaminants are currently impacting groundwater at AOC7 and A9					
5. Prepare and implement a PA work plan to determine if PFAS had been used, stored, or disposed of at any other areas of the site in addition to AOC7 and A9.					
6. Prepare and implement a work plan to evaluate groundwater at AOC A9 and determine if historical impacts above the MCLs are present and if overburden groundwater could affect the USFWS water supply well currently or in the future. If the groundwater exhibits unacceptable risk revise existing ICs to insure that additional water supply wells are not installed in the future.					
Other Comments:					
None.					

1.0 INTRODUCTION

KOMAN Government Solutions, LLC (KGS) has prepared this comprehensive Five-Year Review of the remedial actions for the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) site at the former Fort Devens Sudbury Training Annex (Annex). This is the fourth comprehensive Five-Year Review that has been performed for AOCs at the Former Sudbury Annex. The third five year was completed September 12, 2011. The report has been prepared in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) § 121 the National Contingency Plan (NCP) 40 Code of Federal Regulations (CFR) § 300.430(f)(4)(ii) and USEPA guidance (USEPA 2001).

Section 121(c) of CERCLA, as amended, and Section 300.430(f)(4)(ii) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) require that periodic (at least once every five years) reviews be conducted for sites where hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted (UU/UE) exposure following the completion of all remedial actions for the site. As stated in the NCP, statutory five-year reviews are required no less than every five years after the initiation of the remedial action. The fourth FYR was triggered due to the findings of the third five year completed September 12, 2011 for AOCs at the former Sudbury Annex.

1.1 Purpose of the Review

This report documents the methods, findings, and conclusions of the CERCLA five-year review conducted by the U.S. Army Corps of Engineers (USACE)–New England District (NAE) on behalf of Base Realignment and Closure (BRAC), at the Fort Devens Sudbury Training Annex, Sudbury, Massachusetts. The purpose of the five-year review is to evaluate the implementation and performance of a remedy to determine if the remedy continues to, or will meet, the remedial action objectives specified in the ROD and is, or will be, protective of human health and the environment. In addition, five-year review reports identify issues, if any, found during the review, and identify recommendations to address them.

2.0 SITE CHRONOLOGY

The site chronology presented in Table 2 includes the dates of major events including the completion of remedial actions, construction completions, and previous FYRs.

Chronology of Events, Sudbury Training Annex			
Event	Date		
USACE Site Assessment – designated AOCs A1-A11	1980		
USAEHA Hydrogeological and Subsurface Investigation of AOCs A1-A11	1983		
NUS conducted PA/SI	PA (1985), SI (1987)		
Dames & Moore completed RI for AOCs A1-A11 and potential contamination	1986		
sources in the vicinity of the Capehart Family Housing Area (CFHA), Puffer Pond,			
and associated streams			
Site listed on NPL	February 21, 1990		
Expanded RI – Dames & Moore	1990		
Federal Facilities Agreement signed	November 1991		
Feasibility Study completed	May 1995		
ROD – Source Control OU for AOC A7 and AOC A9	August 1995		
Fort Devens closed	March 31, 1996		
The Devens Reserve Forces Training Area Established	April 1, 1996		
Landfill cap construction start date	July 31, 1996		
ROD – Management of Migration OU's for AOC A7 and AOC A9	September 1997		
Monitoring Well Installation	1992-1996		
Long term groundwater monitoring, cap and institutional control inspections	October 1997 to		
	present		
Long Term Monitoring & Maintenance Plan	April 1998		
MOA for transfer of property from U.S. Army to U.S. Fish and Wildlife Service	September 28, 2000		
First Five-Year Statutory Review	September 2001		
Annex withdrawn from NPL	November 30, 2001,		
	effective date January		
	29, 2002		
Transfer Agreement between U.S. Army and U.S. Air Force for a portion of the	June 3, 2002 (USAF		
former Fort Devens (Sudbury Training Annex)	signed June 5, 2002)		
Decommissioning of Wells OHM-A7-13 and OHM-A7-07	June 2002		
Letter of Transfer for a portion (five FEMA parcels) of the former Fort Devens to	March 31, 2003		
the Federal Emergency Management Agency			
Modification to Memorandum of Agreement between U.S. Army and FEMA for	FEMA signature dated		
the transfer of real property at Sudbury Training Annex	July 29, 2003		
Second Five Year Review	September 2006		
Long-term monitoring and maintenance plan updated	March 2009		
Third Five Year Review	September 2011		
Well JO-A07-M62 found to be permanently damaged	October 2012		
Well point SUDWP-A07-01 installed to replace JO-A07-M62	November 2013		
Long-term monitoring and maintenance plan updated	February 2015		
Fourth Five Year Review	September 2016		

Table 2

3.0 BACKGROUND

The Sudbury Training Annex comprises a total of 73 study areas and AOCs that have been identified since the 1980s. These areas are shown on **Figure 1**. The Annex became part of Fort Devens, now the Devens Reserve Forces Training Area, in 1982. The Annex was placed on the EPA National Priorities List (NPL) as a Superfund Site in 1990 and in May 1991 the Army signed an Interagency Agreement called a Federal Facilities Agreement (FFA) with the EPA, stipulating that site investigations and cleanup actions would follow CERCLA and its amendments under the regulatory guidance of NCP 40 CFR Part 300. In 1995 the Sudbury Training Annex was placed on the Base Realignment and Closure (BRAC) list. The 1995 Record of Decisions (ROD) addresses two AOCs: AOC A7, the old gravel pit landfill; and AOC A9, the POL Burn Area. The remedial action decision for AOC A4 and the management of migration OU for AOC A7 and A9 was signed in September 1997.

As discussed previously, the remedy for the Annex included excavation of contaminated soil on AOC A9 and offsite disposal and placement of this soil under a Resource Conservation and Recovery Act (RCRA) cap on AOC A7. While the management of migration 1997 ROD was a no further action decision, the source control 1995 ROD stipulates long-term groundwater monitoring at AOC A7. Land-use controls include a perimeter fence surrounding the AOC A7 landfill cap area. An additional LUC present for A7, although not defined in the ROD, is restricted access to the USFWS land that contains the landfill. The USFWS designated some of the northwest area of the refuge as closed to the public to protect the AOC A7 remedy.

The Sudbury Annex was deleted from the NPL in January 2002. Ongoing operation and maintenance (O&M) of the landfill cap and groundwater monitoring occurs annually. The Army also reports annually on the condition of the whole Annex as specified in the Long Term Monitoring and Maintenance Plan (LTMMP) (*Sovereign/HGL*, 2015).

3.1 Physical Characteristics

AOC A7 is a 10-acre site that lies between Patrol Road and the Assabet River along the northern installation boundary, as seen in **Figure 1**. Access to the landfill is gained from Patrol Road or Track Road via locked gates. The roads to the landfill are deteriorating. The northern edge of the site is less than 100 feet from the Assabet River at its closest point. The landfill is located on the northern lower slope and a toe of a hill that slopes downward to the Assabet River. Average elevation is 200 feet with rounded and forested hills extending approximately 100 feet above the surrounding lowland (**Figure 2**). The lowland at the former Sudbury Annex is poorly drained with abundant wetlands and small streams throughout. The regional topography is glacially derived and characterized by level to slightly undulating lowlands with oval-shaped hills (glacial drumlins). Surficial deposits include a relatively thin and intermittent glacial till layer separating the glacial outwash sediment overburden from the bedrock outcropping at higher elevations throughout the area. Overburden soils in the wetland areas consist of finer grained silt and clay sized particles with abundant organic debris. A number of kettle ponds are on or nearby the Annex, including Puffer Pond, White Pond, and Lake Boon.

AOC A9 consists of eight acres and is shown on **Figure 1.** AOC A9 was historically a former fire training and flame retardant clothing test area, contained underground storage tanks, a rail yard maintenance area, pesticide storage area, ammunition demolition area and various reported disposal areas. AOC A9, the petroleum oil and lubricant (POL) burn area, was used for product testing and was made available infrequently to local jurisdictions and the Massachusetts Firefighting Academy for fire prevention training. Natick Laboratory used the area for flame-retardant clothing tests, and the

Massachusetts- State Police used this area infrequently for the destruction of confiscated fireworks. All activity stopped at the AOC A9 in the 1990s. A portion of AOC A9 appears to have been recently cleared of trees and brush. Some small debris piles of debris are present. USFWS recently installed a potable water supply well to service two trailers pads yet to be constructed for future shop facilities.

3.2 Land and Resource Use

The U.S. Army purchased the property from numerous landowners and farmers in 1942 to establish the Maynard Ammunition Depot. During World War II, the installation was used as a holding area for ammunition awaiting shipment overseas. After the war, the installation soon acquired its title as the Sudbury Annex. The facility was generally used for troop training, product and equipment testing, munitions/explosives testing and disposal, and disposal of various wastes from the Natick Laboratory, an Army research and development center. In 1982, the Sudbury Annex became a part of Fort Devens, later established as the Devens Reserve Forces Training Area in 1996. In 2000, the Army transferred 2,230 acres to the U.S. Fish and Wildlife Service (USFWS). This transfer of ownership was completed under the Defense Base Closure and Realignment Act of 1990, for its "particular value in carrying out the national migratory bird management program" (*USACE*, 2011).

With the acquired land, the USFWS established the Assabet River National Wildlife Refuge. The refuge encompasses a large wetland complex, several smaller wetlands and vernal pools, and large forested areas. These areas serve as important feeding and breeding areas for migratory birds and other wildlife. The refuge is open to the public for many wildlife-dependent recreational uses, such as wildlife observation, environmental education, hunting, and fishing (**Figure 3**).

The portion of land owned by USFWS that contains AOC A7 is currently not in use. The USFWS designated AOC A7 as a closed area to the public, in order to protect both the public and the selected remedy. The closed area is shown in Figure 2.2. In 2003, the USFWS removed military buildings and non-military buildings in the remaining USFWS property. Barbed wire and other safety hazards were also removed. In 2005, the refuge opened up a series of designated walking trails. In a further effort to open the area up to the public, a visitor center was opened on October 17, 2010, which is open weekly from Thursday-Sunday. Numerous educational programs are conducted in the refuge, including tours of the former Army bunkers, which the USFWS did not remove (*USACE*, 2011).

The refuge is also open to hunting, in accordance with Massachusetts state laws and refuge specific regulations. Permitted species are white-tailed deer, ruffed grouse, gray squirrel, rabbit, woodcock, and spring turkey. In regards to hunting, there are currently no stocking or management practices. The only dogs allowed on the refuge are hunting dogs. Fishing practices are authorized in accordance with state law, though are currently restricted to the Barron fishing access on Puffer Pond.

During the previous review period, all remaining houses and some telephone poles on the USFWS property were removed. Several parking lots have been put in place in the current review period, as well as various small projects around the area. As indicated above, USFWS plans to install two trailers pads yet to be constructed for future shop facilities.

In 2003, approximately 72 acres of the former Sudbury Annex were transferred to the Federal Emergency Management Agency (FEMA), though FEMA formerly had a permit to occupy a parcel of the Annex since 1980. The transferred land included five non-contiguous small parcels. FEMA currently uses the land for its operations and training missions, including use of a Mobile Emergency Response Support (MERS) center.

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About four acres of the former Sudbury Annex were also transferred to the U.S. Air Force (USAF) in 2002. Activities are limited to the operation of a radar/weather station and associated buildings. The Massachusetts Department of Recreation (DCR) owns land adjacent to the refuge, designated as the Sudbury Town Forest. The land has been subject to logging activities. In 2007, 50 acres of this land was transferred to the Department of Fire Services, utilized to build an overflow parking area near their buildings. Other areas surrounding the former Sudbury Annex include mostly residential land with some commercial development north and northeast of the site.

3.3 History of Contamination

Following the closure of the Sudbury Annex, the Army began investigations to determine the nature and extent of contamination in impacted environmental media. In a Preliminary Assessment (*USATHAMA*, 1980), several AOCs and Study Areas were identified. In 1986, Dames & Moore completed a Remedial Investigation on the AOCs and of potential contamination sources in the vicinity. AOC A7, known as the Old Gravel Pit Landfill, was notably used as a laboratory dump, burning ground, and general dump between the late 1950s and 1970s. Unauthorized surface dumping by the public also reportedly occurred until the 1970s when access was restricted. Dumped debris included drums and other chemical containers, glassware, and general refuse (tents, cloth, trash, etc.). Other contaminated areas within the Annex included a former fire training and flame retardant clothing test area, underground storage tanks, a rail yard maintenance area, pesticide storage area, ammunition demolition area, and various reported disposal areas. AOC A9, the petroleum oil and lubricant (POL) burn area, was used for product testing and was made available infrequently to local jurisdictions and the Massachusetts Fire Fighting Academy for fire prevention training (Dames & Moore, 1986).

3.4 Initial Response

The Annex was assessed for contamination under DoD's Installation Restoration Program (IRP) starting in 1980. This was followed by a Site Discovery in 1981 and a Preliminary Assessment and Site Inspection in 1983 and 1987, respectively. In February 1990 the site was officially listed on the NPL. The FFA between EPA and the Army, signed on November 15, 1991, states the Army, as the lead agency, is responsible for carrying out all work required in accordance with the requirements of CERCLA under EPA oversight. Further, the FFA states all work completed at the site pursuant to the agreement and the 1992 Master Environmental Plan (MEP) (*OHM*, 1992) shall be funded by the Army. The Army agreed to undertake, fully implement, and report on the following tasks listed in the MEP:

- A Preliminary Assessment (PA) and Site Investigation (SI) of the Site and all AOCs/Study Areas (SA) identified in the MEP
- Remedial Investigations (RIs) of all AOCs
- Feasibility Studies (FS) of all AOCs
- Proposed Plans and RODs for all AOCs
- All Remedial Actions, Removal and Remedial Designs for all AOCs
- Operation and Maintenance of Remedial Actions at the AOCs

Between 1980 and 2001, the Army conducted investigations at the Annex to address potentially contaminated areas. The investigations were followed up with removal of contaminated soil and underground storage tanks within the Annex. To prevent trespassers from physical harm or from coming

in contact with contaminated areas, the Army fenced off several sites and buildings. The Annex was officially deleted from the NPL in 2002 (USACE, 2011).

3.5 Basis for Taking Action

In 1975, DOD established the Installation Restoration Program (IRP), which sought to identify, investigate, and cleanup contamination from hazardous substances at federal facilities. Starting in 1980, environmental investigations were conducted at the Annex under the IRP.

The initial assessments identified certain areas of the Annex that may be contaminated with POLs, explosives residues or chemical wastes, and other dumping materials. The geology of the Annex was found to be conducive to potential migration from various chemical burial sites, lab operations, chemical storage facilities, and maintenance operations. A survey to evaluate the potential for contaminant migration from the installation was therefore performed (*USATHAMA*, 1980). Further RI and expanded RI reports (*Dames & Moore*, 1986, 1990) identified potential contaminant exposures and migrations in shallow groundwater aquifers as primary risks at the Annex. The only significant contamination was identified from VOCs and other chemicals resulting from the burning of POLs and plastics. **Table 3** below lists compounds of potential concern at AOCs A7 and A9 as identified in 1997 ROD.

Table 3

Compounds of Potential Concern at AOCs A7 and A9 as Identified in 1997 ROD

Soil	Groundwater	Surface Water	Sediment
Pesticides	Pesticides	Metals	SVOCs
4,4'-DDT (DDD and DDE)	4,4'-DDT (DDD and	Iron	N-nitroso-n-propylamine
Dieldrin	DDE)		
Endosulfan			
Alpha chlordane	Alpha chlordane		N,N-bis(2-
Heptachlor	Dieldrin		hydroxyethyl)dodecamid
Heptachlor epoxide	Gamma-BHC (lindane)		VOCs
Beta-benzenehexachloride	Endrin aldehyde		Acetone
Beta-endosulfan	Heptachlor epoxide		Methyl chloride
<u>Herbicides</u>	Beta-endosulfan		<u>Metals</u>
Silvex	Alpha-		Iron
DCPA	hexachlorocyclohexane		Aluminum
PCBs	Gamma-		
Aroclors 1242, 1248, 1254, 1260	hexachlorocyclohexane		
Explosives	SVOCs		
RDX	Naphthalene		
PAHs	VOCs		
Anthracene	Chlorobenzene		
Benzo(a)anthracene	Chloroform		
Naphthalene	Tetrachloroethene		
Phenanthrene	Acetone		
Pyrene	Methylene chloride		
2-methylnaphthalene	1,1,1-tetrachloroethane		

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Soil	Groundwater	Surface Water	Sediment
1,5-dimethylnaphthalene	1,1-dichloroethene		
SVOCs	Trichloroethene		
Bi(2-ethylhexyl)phthalate			
Hexadecanoic (palmitic) acid	Metals		
Octodecanoic (stearic) acid	Lead		
VOCs	Explosives		
Acetone	3-nitrotoluene		
1,1,1-trichloroethane	1,3,5-trinitrobenzene		
1,1,2-trichloroethane	2,4,6-trinitrotoluene		
1,2-dichloroethane			
Chloroform			
Ethylbenzene			
Tetrachloroethene			
Chlorobenzene			
Toluene			
Xylene			
Methylbenzene			
Nonane			
Octane			
1,2,3,4-tetramethylbenzene			
1-ethyl-2-methylbenzene			
1,3,5-trimethylbenzene			
Metals			
Mercury			
Lead			
Arsenic			
Thallium			
Copper			
Zinc			

4.0 **REMEDIAL ACTIONS**

This section discusses the Remedial Action Objectives (RAOs) and the selection and implementation of the remedial actions for AOC A7. RAOs consist of goals for protecting human health and the environment. They specify the chemicals of concern (COCs), exposure route(s) and receptor(s) and identify an acceptable contaminant level (ARARs arid risk-based) or range of acceptable risk for each exposure route. While the 1997 ROD was no further action and does not require a five year review, the selection of the 1995 and 1997 ROD remedial actions for A7 are discussed in this section for completeness.

4.1 Remedial Action Objectives (RAOs)

No cleanup concentration requirements are stipulated in the RODs. While the 1995 ROD does not list cleanup goals, RAOs include eliminating potential risk to human health and the environment associated with exposure to impacted wastes and minimizing off-site migration. It also states that a groundwater sampling and analysis program, to enable the assessment of contaminant migration from A7, and a monitoring and, maintenance program for the landfill cap will be conducted. The ROD also states, "The environmental monitoring program would be submitted for regulatory review and approval and will identify the sampling locations and frequencies...". **Figure 4** shows AOC A7.

A Feasibility Study (FS) was conducted in 1995 to evaluate potential remedies to reduce potential exposure risks to groundwater (*OHM*, 1995). Based on findings and information relating to contamination, migration pathways, and environmental media of concern, RAOs were developed to aid in the development and screening of alternatives. Soil and groundwater at AOCs A7 and A9 were separated into two operable units (OUs), one for Source Control (SC) at AOC A7, and one for potential management of migration (MOM). The SC remedy could be selected with existing data at the time; however, the remedy for MOM required additional data.

The selected remedies are defined in three RODs completed in 1995, 1996, and 1997 by OHM Corporation. The ROD completed in 1995 states that for AOC A7, the primary RAOs are:

- Eliminate potential risk to human health and the environment associated with exposure to contaminated wastes;
- Minimize off-site migration of contaminants, and;
- Limit infiltration of precipitation to the underlying waste within the landfill area, thereby minimizing leachate generation and ground water degradation.

The 1995 ROD states that for AOC A9, the primary RAO is:

• Reduce potential risk to human health associated with exposure to contaminated soil.

With respect to cleanup levels, the 1995 ROD notes:

To meet the RAOs identified in Section VII, the Army proposes to conduct an action intended to provide SC and stabilize existing site conditions. For the laboratory waste at AOC A7, no specific cleanup levels were developed since the waste will be excavated and transported off site for treatment and disposal.

For the contaminated soil at AOC A9, the Army has established a cleanup level of 30 parts per million (ppm) for arsenic and 20 ppm for thallium. These cleanup levels are based on risk and will be protective of public health and the environment. A letter from USEPA dated May 19, 1995,

presented the development of the risk-based cleanup level for thallium (USEPA, 1995). Cleanup levels for ground water will be developed as appropriate within the MOM operable unit for AOCs A7 and A9.

The ROD completed in 1996 (OU 4 and 5) was determined to require no further action, as follows:

The U.S. Army and USEPA, with concurrence of the Massachusetts Department of Environmental Protection (MADEP), have determined that No Action under CERCLA is necessary to address contamination at OU 4 and OU 5. However, the Army will close the septic tank behind Building T104 at OU 5 under state regulations.

The ROD completed in 1997 (OU AOC 4, 7, and 9) was determined to require no further action, as follows:

Based on the results of the Baseline Risk Assessments and ecological risk assessments in the SI/RI and SI/RI addendum reports and the technical memoranda, No Action under CERCLA is necessary to reduce contaminant concentrations or control human health or ecological exposure for AOC A4 and the Management of Migration OUs at AOCs A7 and A9. No five-year site reviews will be performed as part of this remedy.

Although there are no actions associated with the No Action under CERCLA decision, the Army will continue to monitor groundwater at and conduct five-year site reviews for AOC A7 as part of the remedy for the AOC A7 Source Control OU. The Final Operations and Maintenance Plan for the Landfill Area of Concern A7 details the groundwater monitoring program. Land use restrictions associated with the source-area remedy will be described in the Environmental Condition of Property report and included in the property transfer documents.

Although the 1995 ROD states that cleanup goals were to be presented in the 1997 ROD for AOC 7 and 9, that 1997 ROD does not stipulate any particular cleanup concentration requirements. The RAOs in the original ROD (dated 1995) include general concepts (i.e., not chemical-specific) for eliminating potential risk to human health and environment associated with exposure to contaminated wastes and minimizing off-site migration of contaminants. As noted above, to enable the assessment of contaminant migration in groundwater, the 1995 ROD states that the Army will conduct a groundwater sampling and analysis program and a monitoring and maintenance program for the landfill cap, without chemical-specific requirements.

The first Long Term Monitoring and Maintenance Plan (USACE, 1998) stated the effectiveness of the selected remedy would be evaluated by monitoring groundwater contamination trends and comparing results to Massachusetts Contingency Plan (MCP) groundwater (GW) standards. These standards are not cleanup requirements per the ROD, but are used as points of comparison as they are consistent with the Safe Drinking Water Act.

Under the original LTMMP (USACE, 1998), groundwater monitoring was required for the contaminants of potential concern (COPCs) identified in the 1994 Risk Assessment (RA) (OHM, 1994). The COCs included both COPCs from the RA as well as other contaminants not listed as COPCs in the RA. Under this decision, groundwater was sampled for the following: VOCs, pesticides, target analyte list (TAL) metals, phosphate, sulfate, nitrate, ammonia, total dissolved solids (TDS), chemical oxygen demand (COD), chloride, and cyanide.

The 2009 LTMMP pointed out that MassDEP MCP GW-3 standards are appropriate for comparison, because the site is not within a Current Drinking Water Source Area or within a Potential Drinking Water Source Area. A review of current MassDEP groundwater and surface water protection areas indicated

AOC A7 and A9 are not located within a drinking water aquifer, Zone I or II Interim Wellhead protection area, or a potentially productive drinking water aquifer, and the A7 site groundwater is prohibited from being used as drinking water. Historically the more stringent GW-1 standards (drinking water standards) were used for the comparison of VOCs, pesticides, and metals as opposed to the applicable GW-3 standards.

The 2015 LTMMP (Sovereign, 2015) evaluated the remedy using the module-based approach described in *Evaluating, Optimizing or Ending Post-Closure Care at Municipal Solid Waste Landfills Based on Site Specific Data Evaluations* (ITRC, Alternative Landfill Technologies Team, 2006). The review included optimizations to the program, which included reductions in sampling frequency, reductions in groundwater analyses and reductions in landfill gas monitoring.

The current LTMMP continues to identify the COCs as PCE, TCE, 1,1,2,2-tetrachloroethane, and lindane, since they comprise the majority of risk to human health. Groundwater samples are collected annually and submitted for VOCs, organochlorine pesticides, TAL metals and mercury, total cyanide, and COD analyses as specified in the 2015 LTMMP.

4.2 Remedy Selection

The selected remedy addresses SC at AOCs A7 and A9 by eliminating or reducing the risks posed by the presence of the landfill at AOC A7 and the contaminated soils at AOC A9 (OHM, 1995). The major components of the selected remedy for AOCs A7 and A9 include:

- Excavation and off-site treatment and disposal of laboratory waste at AOC A7
- Excavation of contaminated soil from AOC A9 and consolidation at AOC A7
- Consolidation of contaminated soil and solid waste at AOC A7 to within the limits of the landfill cap
- Construction of a Resource Conservation and Recovery Act (RCRA) Subtitle C landfill cap at AOC A7
- Environmental monitoring and O&M at AOC A7
- Land Use Controls (LUCs) at AOC A7 to limit future site use and to restrict site access
- Five-year reviews at AOC A7

4.3 Remedy Implementation

The RCRA Subtitle C landfill cap was constructed over the existing landfill at AOC A7 in order to fulfill the RAOs specifically identified in the 1995 ROD. The landfill cap was completed in the fall of 1996, and was designed to provide a barrier to infiltration and direct precipitation runoff away from landfill material. The cap consists of the following geosynthetic layers (described from top of waste to top of finished cap):

- 12 inches of subgrade fill
- A geocomposite gas collection layer
- A geosynthetic clay liner
- A 40-mil linear low density polyethylene geomembrane
- A geocomposite drainage layer

- 15 inches of drainage sand
- 15 inches of filter sand; and,
- 6 inches of vegetative support soil (topsoil)

The Final Operations and Maintenance Plan for the Landfill AOC A7 (*Roy F. Weston*, 1997) detailed the groundwater monitoring program. The LUCs associated with the 1995 ROD were identified in the Environmental Condition of Property report and in the current LTMMP (*Sovereign/HGL*, 2015). The LUCs for the entire Sudbury Annex can be found in the memorandums of agreement (MOAs) (**Appendix G**), detailing the agreements between the Army and other federal agencies regarding transferal of the former Sudbury Annex land.

4.3.1 Systems Operations/Operation and Maintenance (O&M)

The 1997 Operations and Maintenance Plan (*Roy F. Weston*, 1997) entails operational measures to ensure that the remedy continues to be effective at the AOC A7 landfill and surrounding area. The 2015 LTMMP contains the landfill inspection activities from the 1997 O&M plan, consisting of checking the integrity and functionality of the following items:

- Landfill cap
- Gas vents
- Drainage system
- Access road

4.3.1.1 Drainage System Maintenance

As part of LTM activities, the functionality of the drainage system is monitored annually. The system functions in conjunction with the landfill cap to facilitate the drainage of surface water and infiltrated water off the cap. The cap drainage system has been found to be in good condition, aside from minor unwanted vegetative growth in the riprap areas.

4.3.1.2 Landfill Cover Maintenance

There has been no evidence of poor conditions affecting the cover surface. No new depressions have been observed and vegetative growth has been monitored and removed when necessary to preserve the cover system.

4.3.1.3 Landfill Gas Collection System Maintenance

The above ground portion of the landfill-gas collection system is inspected annually as part of landfill monitoring activities. The landfill gas vents have been observed to be in good condition. All vent pipes are intact and functioning. Bird screens and hose clamps were recommended for replacement following the landfill inspection conducted in November 2015 (USACE, 2015). These were replaced in December of 2015. Active hornet's nests have also been discovered, preventing the sampling of Vent 1.

4.3.1.4 Long-Term Landfill Gas Monitoring

Landfill gas monitoring has been conducted annually in accordance with the LTMMP. The Draft 2015 Annual Inspection Report (USACE, 2015) includes four passive gas vents in these annual sampling events, though Vent 1 has not been sampled since 2012 due to the presence of active hornet's nest. Vents 1, 2 and 4 were not sampled in 2013 or 2014 because of the presence of hornet's nests as well.

4.3.2 Long-Term Groundwater Monitoring

The ROD required development of a long-term groundwater monitoring plan to evaluate remedy performance and assess future environmental effects. The ROD called for semiannual groundwater monitoring for a minimum of 30 years, though sampling changed from semiannual to annual per recommendation prior to the development of the 2004 LTM Annual Report (*USACE*, 2005).

During the FYR period, groundwater samples were collected annually (*LTMMP 2009, Sovereign/HGL*). During the monitoring period of 2011 to 2014, the annual program included sampling six groundwater monitoring wells. The 2015 annual program included four groundwater monitoring wells. This reduction was included in the 2015 LTMMP (*Sovereign/HGL, 2015*).

Annually groundwater elevations are collected at 12 monitoring wells and two staff gauge locations. Monitoring wells were sampled for VOCs, pesticides, total metals/mercury, COD and cyanide and water quality parameters per the 2009 and 2015 LTMMPs (*Sovereign/HGL 2009 and 2015*).

4.3.3 Institutional Controls

The ROD required implementation of ICs in the form of zoning and deed restrictions for any property released by the Army at the Annex during the Fort Devens base closure activities. ICs are non-engineered instruments, such as administrative and legal controls, that help minimize the potential for human exposure and/or protect the integrity of a response action. ICs are typically designed to work by limiting land or resource use or by providing information that helps modify or guide human behavior at a site. ICs are a subset of Land Use Controls (LUCs). LUCs also include engineering controls, which provide a physical barrier, such as fences. In addition, the ICs are evaluated during the FYR according to OSWER Directive 9355.7-18, entitled "Recommended Evaluation of Institutional Controls: Supplement to the 'Comprehensive Five-Year Review Guidance'' dated Sept 13, 2011.

The primary LUC on the Sudbury Annex in accordance with the 1995 ROD is a fence surrounding the AOC A7 landfill cap area. An additional LUC, though not defined in the ROD, is restricted access to the USFWS land that contains the landfill. The USFWS designated some of the northwest area of the refuge as closed to the public to protect the AOC A7 remedy.

ICs, referred to as "use controls" in the Sudbury Annex transfer documents, are the environmental compliance responsibilities described in the MOAs for the transfer of property between the Army and the USAF, FEMA, and USFWS. All three agreements explain the environmental remediation of the contaminated portions of the property that has been undertaken by the Army in accordance with the FFA and in cooperation with the MassDEP. The USFWS MOA contains the ICs for AOC A7 and requires any use of the portion of the parcel within the boundaries of AOC A7 shall not disturb either the integrity of the final covers, liners, or other components of the containment system(s) or the function of the monitoring system(s) in place. These ICs prohibit:

- Surface application of water
- Extraction, consumption, exposure, or utilization of groundwater underlying AOC A7
- Any disturbance of the surface or subsurface of that portion of land within the boundaries of AOC A7 in any manner (construction, filling, drilling, excavation, or change in topography) that might interfere with the protectiveness of the remedy

In 1999, the BEC, EPA Remedial Project Manager, and MassDEP Federal Facilities Manager approved an addendum to the 1998 LTMMP that prescribed IC inspection criteria be performed at least annually.

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The IC criteria included an annual inspection, an annual report, and a review of ICs as part of the next five-year review. The annual inspections include the following components: document review, interviews, and a physical on-site inspection. Documents generated within the year are reviews to confirm that there have been:

- no land use changes,
- no activities that may have disturbed the integrity of the landfill containment system or the function of the monitoring system at AOC A7,
- no activities that have disturbed the subsurface soil below four feet site deep,
- no negative impact on the monitoring well network or water table at AOC A7 and P58, and
- no disposal of materials is occurring at P31 and P58.

The owners of properties that make up the former Annex are interviewed to review compliance with the ICs. These interviews have taken place once annually for the review period for all Annex ICs including those associated with AOC A7. All findings are documented on an inspection checklist. The annual report summarizes any known or suspected IC issues identified during the annual inspection.

The physical on-site inspection consists of examining the following:

- Land use conditions (presence of buildings and level of recreational use)
- Evidence of any changes to the use of the Site
- Evidence of any disturbance to the integrity of the landfill containment system at AOC A7
- Evidence of any disturbance to the function of the monitoring system at AOC A7
- Evidence of any significant excavation or surface or subsurface soil disturbance at AOC A7
- Evidence of any activities that have disrupted the subsurface soil at the Site below the depth of four feet, and;
- Other conditions necessary to evaluate the continued protectiveness of the ICs

5.0 **PROGRESS SINCE LAST FIVE YEAR REVIEW**

This section of the 2016 FYR discusses the protectiveness statement from the previous FYR and issues and recommendations and actions taken since the previous FYR.

5.1 Protectiveness Statement, Recommendations, and Actions from 2011 Five Year Review

The protectiveness statement identified in the third FYR is listed below in Table 4 (USACE, 2011):

Sudbury Annex	Protectiveness Determination	Protectiveness Statement
AOC A7	Protective	"The remedies associated with AOC A7 continue to be protective of human health and the environment. Long term protectiveness of the remedial actions should be verified by continuing the ongoing groundwater monitoring program and the maintenance program. Continued IC inspections will also ensure long term protectiveness. Because the remedial action at AOC A7 is protective, the site is protective of human health and the environment."

Table 4Protectiveness Determinations Statement from the 2011 FYR

Issues and recommendation from the previous FYR and actions taken are listed in Table 5.

	11010	ing Tuken Sine	e the East 110		
Issues from Previous Review	Recommendations/ Follow-up Actions	Party Responsible	Milestone Date	Action Taken and Outcome	Date of Action
Control of vegetation in and around the landfill cap should be improved.	Vegetation growth control on and around the landfill cap should be implemented in a timely manner when the inspections call for it. Coordination of this effort with USFWS (e.g. herbicide application/approval) should be improved.	Army	01/01/2013	Landfill maintenance activities related to vegetation growth control are now performed in a timelier manner. Landfill maintenance still includes mowing, clearing debris from the fence line, ensuring the toe drain and riprap areas are clear of debris/vegetation, as well as applying herbicide to areas encroached with invasive species, if deemed necessary.	October 2012
The fence is being overgrown with trees and shrubs preventing access for an inspection and compromising the fence integrity.	Maintenance of the fence should be improved to facilitate inspections as well as restrict access.	Army	Fall 2011	Annual landfill maintenance now includes clearing any debris or overgrowth from the fence that compromises the fence line integrity.	October 2012
Performance metrics for LTM of the remedy should be established in the LTMMP.	These metrics should be established in the LTMMP according to the ITRC guidance (ITRC, 2006).	Army	01/01/2013	Because there is no active or passive remediation in progress at the landfill, the performance metric will now consist of evaluating the annual LTM data against established COC trends, per recommendation in the revised LTMMP (<i>Sovereign/HGL</i> , 2015).	2015 (LTMMP)

Table 5 Actions Taken Since the Last Five-Year Review

Issues from Previous Review	Recommendations/ Follow-up Actions	Party Responsible	Milestone Date	Action Taken and Outcome	Date of Action
Technical memorandum on the protectiveness assessment for AOCs P31/P58 not completed.	Finalize the report.	Army	01/01/2013	Technical memorandum on the protectiveness assessment for AOCs P31/P38 has been finalized.	2011
POCs for each new owner are difficult to locate.	Identify points of contact for institutional control inspections.	Army	01/01/2013	POCs were established in the 2011 AR (<i>Sovereign/HGL</i> , 2011).	2011 (AR)
Surface water staff gauges are difficult to locate.	GPS coordinates and a GPS unit should be utilized to locate surface water gages during the annual sampling event.	Army	01/01/2013	GPS coordinates have been utilized to locate surface water gages during subsequent annual sampling events	Fall Sampling 2012

5.2 Status of and Effectiveness of Measures

Landfill maintenance activities since the last FYR have included vegetation growth control in a timely manner following inspections. During the annual landfill maintenance event, activities include mowing, clearing debris from the fence line, and ensuring the toe drain and riprap areas are clear of debris/vegetation. Areas are evaluated for encroachment of invasive species, and the application of herbicide is utilized when deemed necessary. The annual landfill maintenance event also includes inspection and improvement of the fence line by removal of debris and overgrowth. Mowing activities are annually performed to the extent of the wetland boundary established in the 2012 landfill maintenance event.

In regards to performance metrics, it was established that results at the Former Sudbury Annex would continue to be evaluated by monitoring historical COC trends for cleanup. GW-1 and GW-3 standards are utilized for comparative purposes, not as any type of clean up goal. Annual reports since the last review have continued to evaluate groundwater analytical results in this fashion.

The Technical memorandum on the protectiveness assessment for AOCs P31 and P58 was completed in 2013.

New points of contact for Institutional Control inspections were established in the 2011 AR (*Sovereign/HGL*, 2011). Contacts were verified during the FYR.

Surface water staff gauges were verified using GPS coordinates in 2012. During subsequent annual LTM events, GPS is used to locate the staff gauges due to difficulty associated with dense vegetation.

6.0 FIVE YEAR REVIEW PROCESS

6.1 Administrative Components of the Five-Year Review Process

The commencement of this five-year review was announced in the public notices published in local and regional newspapers in January and February 2016 The Former Sudbury Training Annex Five-Year Review was led by BRAC and supported by Christine Williams of the U.S. EPA, Remedial Project Manager for the Site, David Chaffin of the MassDEP and Robert Simeone, the Community Involvement Coordinator (CIC). Elizabeth Anderson of H&S Environmental assisted in the review as the representative for the support agency.

The review, which began on 1/6/2016, consisted of the following components:

- Community Involvement;
- Document Review;
- Data Review;
- Site Inspection; and
- Five-Year Review Report Development and Review.

6.2 Community Notification and Involvement

Activities to involve the community in the five-year review process included a notice published in the local and regional newspapers (see **Appendix B**). Notices were place in the "Sudbury Town Crier" on 1/25/2016, the "Hudson Sun" on 2/4/2016, the "Beacon Villager" on 2/4/2016, the "Stow Independent" on 1/27/2016, and the "Nashoba Valley Voice" on 1/30/2016, stating that the review is being conducted and inviting the public to submit any comments to the Base Realignment and Closure Division of the U.S. Army Garrison, Fort Devens. The results of the review and the report will be made available at the Site information repository located at The Devens Repository, Department of the Army, Base Realignment and Closure Division, U.S. Army Garrison Fort Devens, 30 Quebec Street, Unit 100, Devens, MA 01434-4479. No substantive comments were received from the public.

6.3 Document Review

This five-year review for the Former Sudbury Annex consisted of a review of relevant documents including previous Five-year reviews, LTM plans, RI reports, FS reports, ESDs, annual reports and monitoring data. Documents reviewed are presented in **Appendix A**. This document review section also lists the Applicable or Relevant and Appropriate Requirements (ARARs) for the site and any changes to toxicity values.

6.3.1 Background Documents Review

Site-related documents reviewed as part of this effort are listed in the Appendix A.

6.3.2 Review of ARARs

ARARs and To Be Considered (TBC) criteria for AOCs A7 and A9 were identified in both the RI and FS. The ARARs tables contained in this report are reproductions of those contained in the Final Feasibility Study Report. The original table numbers were retained for ease of comparison in the 1995 ROD, and they are unchanged in **Appendix E** of this report.

There are no chemical-specific ARARs for AOC A7 since the area is covered with a landfill cap. Most of
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the ARARs are, action specific and pertain to the construction of the landfill cap, to storm water management, to environmental monitoring, to consolidation and to other various activities at AOC A7 and are still applicable.

The Federal Safe Drinking Water Act Drinking Water Standards maximum contaminant levels (MCLs) were not included as ARARs within the RODs approved for AOC A7, as the primary element of the selected remedy was source containment and the subsequent OU 1997 ROD resulted in no action. Instead, groundwater monitoring results are compared to State of Massachusetts GW-1 and GW-3 groundwater values as specified in the Massachusetts Contingency Plan (MCP) for the purposes of demonstrating the remedy meets the requirements specified in the ROD. Post landfill closure monitoring indicates groundwater concentrations are decreasing and are below or approaching the GW-1 monitoring criteria. No changes in the ARARs are required at this time.

6.4 Data Review

Data reviewed for this FYR included data presented in the 2011 through 2015 Annual Reports. The following data summaries, observations, and analysis were prepared for the FYR period:

- A summary of groundwater quality results from 2011 through 2015 for AOC A7; Tables 6 through 11
- COC concentration trend plots for selected monitoring wells for AOC A7 (Appendix C)
- Landfill Gas monitoring Data; Tables 12 through 15;
- Landfill Inspection documentation(Appendix D); and
- Statistical Analysis of SUD-A07-065 and OHM-A7-08 (Appendix F)

Highlights and major trends associated with groundwater data at Sudbury Training Annex over the reporting period (e.g. 2011-2015) are summarized below.

6.4.1 Groundwater and Surface Water Elevations

The 2006 five-year review recommended semi-annual water level measurements, however as part of the optimization of the monitoring plan the 2009 LTMMP proposed reducing the collection of water level data to an annual frequency.

It is well established through historical review that A7 groundwater flows toward the Assabet River and the overall COC concentration trends are decreasing. Therefore, annual water level data collection was initiated (*HGL*, 2009).

Refer to **Figure 5** for the most recent Groundwater Contours. Groundwater level monitoring data for the review period support the historically established north/northwest groundwater flow direction at the site.

Groundwater elevations are monitored annually for compliance with RAOs, which require a demonstration that groundwater levels and gradients remain low within the landfill limiting infiltration to the underlying waste.

6.4.2 Groundwater Analysis

The 2011 FYR for AOC A7 recommended establishing performance metrics per Interstate Technology and Regulator Council (ITRC) guidance. Because there is no active or passive remediation in progress at the landfill, the performance metric will consist of evaluating the annual LTM data against established COC trends. The landfill will also be evaluated for transition from Post-Closure Care to Custodial Care

per the ITRC guidance.

The LTMMP in 2015 evaluated the site and compiled multiple recommendations including adjustments to chemical analysis and frequency of sampling. The specific recommendations include removal of the metals analyses beginning with the fall 2016 LTM program. Removal of well OHM-A7-51 from the LTM sampling program based on the last groundwater analytical exceedance documented in October 2003. Removal of well OHM-A7-09 from the LTM sampling program based on no historical groundwater analytical exceedances. Continual sampling of upgradient monitoring well SUD-A07-14 biennially based on no groundwater analytical exceedances. Continue sampling of OHM-A7-08 and SUD-A07-065 biennially based on downward trends. Continue sampling new well point SUDWP-A07-01 on an annual basis. The sampling frequency was evaluated during this FYR and is included in Section 6.5.3. The sampling frequency will be evaluated again during the next five year review in 2021.

In addition, landfill gas monitoring will be conducted every 5 years, prior to the five-year report submission. Lastly, utilize global positioning system (GPS) coordinates and a GPS unit to locate surface water gauges during the annual sampling event.

Target compounds and overall trends were reviewed for the FYR period using MassDEP MCP GW-3 criteria as no site specific cleanup concentrations are listed in the ROD and site groundwater is not used for drinking water. Historical data results for each operating year of the five-year review period are contained in **Tables 6** through **11**. To achieve the RAOs outlined in the ROD, decreasing trends are analyzed. During this five year review period concentrations of PCE, TCE and the associated daughter products indicated decreasing or stable concentrations. In addition, pesticides concentrations indicated decreasing or stable concentrations.

Appendix C contains time series plots indicating historical sampling results for select compounds. All data indicate concentrations are below the comparison criteria (MassDEP GW-3) standard and meeting the objectives of the ROD. In addition, a review comparing historical sampling to the more stringent GW-1 criteria was performed and determined the site groundwater achieved or was approaching these values.

Mann-Kendall statistical analysis was performed on wells OHM-A7-08 for PCE, Lindane and 4,4'-DDD and SUD A07-065 for TCE and PCE (**Appendix F**). The results indicated decreasing concentration trends with 99% confidence factor.

6.4.3 Interviews

As part of the FYR review process, interviews were conducted in accordance with the USEPA Five Year Review Guidance (2001) and summaries of each interview are provided in **Appendix B**. Those interviewed included the following:

- Robert Simeone, USACE
- Christine Williams, USEPA
- David Chaffin, MassDEP (he is unfamiliar with site)
- Libby Herland, USFWS
- Tom Eagle, USFWS (is interview included)
- Mike Moran, FEMA

Several attempts were made to contact USAF; however, they did not return our calls.

In general, comments related to the site were positive and supportive. Mr. Moran of the FEMA MERS program indicated that he felt there is a lack of communication of any continuing cleanup efforts, but was

unsure if there were presently any active cleanup efforts that would require public awareness. Regardless, he felt the completed past cleanup efforts have allowed visitors to enjoy the area and the environment. Mr. Eagle of the USFWS also felt uninformed of what is specifically being done in regards to current cleanup work, but indicated that he feels he is not involved in the project so does not need to know much.

Ms. Libby Herland of FWS indicated some of the general public surrounding the Sudbury Annex are not convinced the site is clean. However, most people appreciate the clean environmental and the area that the cleanup provides.

Mr. David Chaffin of MassDEP indicated that it was not necessary to interview him, as he would provide comments on the FYR.

Ms. Christine Williams of EPA indicated the Army needs to generally stay more engaged at the sites. She also felt the maintenance work needs to be improved at the site, such as maintaining wells and well screens. Ms. Williams indicated she did not know of any IC breaches or complaints, however she indicated FWS may be installing a well at AOC A9.

The Army indicated that the LUCs and ICs were in place and working as planned. The interviewee indicated no reports of planned new construction or development on the Site.

6.4.4 Five-Year Review Site Inspection

The FYR site inspection was conducted in November 2015 by H&S and on March 25, 2016 with the regulatory agencies, DEP and USEPA, USACE and H&S. Photos from site inspections are presented in **Appendix D**.

During the site inspection on March 25, AOC A7, A9, P31 and P58 were visited. No issues were identified at the AOC A7, P31 and P58. At AOC A9, the area had recently been cleared and the well recently installed by USFWS was observed. According to Tom Eagle of the USFWS, the well was installed to provide potable water to service two trailer pads to be constructed for future shop facilities. He did not have the final construction logs on the well at the time of this review.

6.4.5 Public Outreach

The public notices published in local and regional newspapers have served as the primary community outreach forum for information regarding the Sudbury Annex, contaminated groundwater, and the remedies to be exchanged. During the FYR period, notification regarding the FYR was published. No other notifications occurred.

6.5 Technical Assessment

This section of the 2016 FYR details responses to the key questions from the 2001 EPA Guidance on conducting FYRs as follows:

- Question A: Is the remedy functioning as intended by the decision documents?
- Question B: Are exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of the remedy still valid?
- Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

Responses are provided as follows:

Question A: Is the remedy functioning as intended by the decision documents?

No. The remedy is still protective in the short term since, the landfill cap, gas ventilation system, and drainage system at AOC A7 achieve the RAOs stated in the ROD. ICs continue to prohibit any use of groundwater as drinking water and any undesired use of the land at AOC A7.

However, a water supply well (A9WSW) was recently installed for potential recreational/transient use at a seasonal campground location for FWS Interns. The 1997 MOM ROD stated that there was a presumption that no drinking water wells would be installed at AOC A9 for residential use due to transfer to the USFW as a refuge, however, no ICs were implemented to prohibit drinking water wells at AOC A9. Construction details and drinking water analysis were provided by USFWS. Sample results indicated all compounds were below MCLs with the exception of naturally occurring compounds arsenic, iron and manganese. Arsenic was detected at 0.11 mg/L and the MCL is 0.10 mg/L. Iron was detected at 0.52 mg/L and the MCL is 0.3 mg/l and manganese was detected at 0.069 mg/L and the MCL is 0.05 mg/L. The well is not in use at this time and is scheduled to be sampled in August 2016 to confirm these sample results as well as to check for the presence of emerging contaminants.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and RAOs used at the time of the remedy still valid?

No. The remedy is still protective in the short term, however some of the exposure assumptions and toxicity values have changed. The RAOs in the 1995 ROD focused on assuring that exposure to COCs does not occur and eliminating the exposure pathway. Some exposure assumptions and toxicity values have changed over time that would alter the original risk estimates. For example, in 2014, USEPA revised recommended exposure factors such as body weight that would now result in slightly lower risk estimates and slightly higher risk-based cleanup goals than those prepared at the time of the ROD. Updated toxicity values for TCE now result in significantly higher hazard quotients for non-cancer health effects, and require age-specific adjustments (i.e., increased sensitivity in children) for cancer risk estimates. However, other than cleanup goals for arsenic and thallium in consolidated soil, there are no chemical-specific cleanup goals defined in the RODs. Because exposure is prevented and detected chemicals levels in groundwater continue to decrease in concentration and are spatially localized to directly under the landfill cap, the changes in toxicity values and exposure factors do not impact the remedy and alter the protectiveness

Although no ARARs are identified in the 1996 and 1997 RODs, action-specific ARARs were presented for the construction of the consolidated landfill in the ROD dated 1995. Two chemical-specific "to be considered" cleanup goals were developed for arsenic (30 mg/kg) and thallium (20 mg/kg) to identify soil for consolidation. MassDEP MCP groundwater standards are being used as points of comparison for monitoring the groundwater, and are consistent with the Safe Drinking Water Act usually do not change with risk assessment updates. During the five year review period, no changes to the MCP groundwater monitoring criteria used for comparison purposes occurred.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

Yes Recently, EPA has identified PFASs, perchlorate and 1,4-dioxane as emerging contaminants that need to be evaluated at sites where fire-fighting foams, explosives or chlorinated solvents containing these chemicals have been used. Records for the Sudbury Annex indicate that fire-fighting activities, fireworks disposal and the historical presence of solvents occurred at AOC A9. Additional assessments would be necessary to evaluate for these compounds. It should be noted the specific use of PFAS containing firefighting foam is not known. As noted in the response to Question A, a water supply well (A9WSW) was recently installed at AOC A9; however, the well is not in use at this time and is

scheduled to be sampled in August 2016. The Army is not aware of any additional information that would question the protectiveness of the remedy.

6.5.1 Remedial Action Performance and Monitoring

The remedial actions are functioning as intended and response actions are operating as designed including the following:

- Based on the inspections during the FYR period, landfill cap system is in good condition and continues to prohibit contact with site contaminants. Annual reporting including site inspection logs and Geotechnical Inspection Reports verify the cap system operates as intended;
- The cap appears to be functioning as designed and limiting direct recharge through the landfill materials to the underlying aquifer. Long-term monitoring of groundwater below and downgradient of the cap indicates that detected chemical levels in groundwater continue to trend downward in concentration and are spatially localized to underlying the landfill cap only. Annual reporting including evaluations of groundwater analytical results and groundwater elevations indicate the cap system is functioning as designed.
- Due to heavy brush and undergrowth at monitoring locations located outside of the landfill cap area, GPS will be used to determine well locations.

6.5.2 System Operations/ Operation and Maintenance

O&M for the Sudbury Annex is being performed in accordance with the 2015 LTMMP (*Sovereign/HGL*, 2015) and the O&M Plan (*Roy F. Weston, 1997*). Continued preventive maintenance includes continued mowing of the area of adjacent cap; removal of moss at the toe of the landfill; and removal of trees that may compromise the fence line.

6.5.2.1 Landfill Gas Monitoring Data and Landfill Inspection

A passive gas venting system was installed to facilitate the ventilation of any methane generated from the degrading waste material beneath the landfill cover system. The passive system consists of four 6-inch diameter gas vents. Annual landfill gas monitoring was performed in November or December from 2011 through 2015 by the U.S. Army Corps of Engineers, New England District (NAE). Tables containing landfill gas vent data can be found in **Tables 12** through **15**. Minimal levels of methane and VOCs have been detected during some monitoring events. Carbon dioxide levels have historically remained low, and were relatively consistent form 2011 to 2015, ranging from as high as 4.0 % CO2 at GV-3 in 2012 to as low as 0 % at GV-4 in 2014. Lower Explosive Limit (LEL) levels have also consistently remained at zero with the exception of 2015 when a concentration of 0.002 was detected at A7-2, A7-3 and A7-4. There are no site-specific decision limits for the landfill gases.

The annual inspection of the landfill was conducted in November 18, 2015 by the U.S. Army Corps of Engineers in the presence of the EPA. During the 2015 inspection of the landfill, the landfill was found to be in good condition with no actively eroding areas or settlement. An inspection report is included in **Appendix D** along with the landfill inspection checklist. The report made the following recommendations:

- Continue mowing of the field area adjacent to the cap to prevent encroachment of woody and wetland species on the cap.
- Clear moss and other debris in the near future in the toe drain area.
- Replace hose clamps and bird screens at all gas vents.

- Remove hornet's nests from landfill gas vents.
- Remove any trees that may compromise the perimeter fence in the future.
- Apply herbicide along access road, parking lot, and riprap areas where unwanted vegetation has appeared.

6.5.3 Opportunities for Optimization

The optimization evaluation conducted in 2015 as part of the LTMMP (*Sovereign/HGL*, 2015) recommends several changes to the monitoring program at the Annex be reviewed during the FYR. These recommendations were in response to historically downward trends.

The report recommends the removal of metals analyses beginning the fall 2016 program. Although several metals have been detected at varying concentrations at the site, all metal and mercury results have remained below the corresponding GW-1 and GW-3 standards with the exception of zinc in well SUDWP-A07-01. This well was constructed with galvanized steel. Under 310 CMR 123(1)(h) analyte removal under post closure care is complete.

The report also recommends removal of well OHM-A7-51 beginning with the fall 2016 sampling. This is based on the last groundwater analytical exceedance documented in October 2003 (PCE) and a compliance point, per 310 CMR 19.132 (2), that is located hydraulically downgradient (SUD-A07-065).

A Mann-Kendall constituent trend analysis and linear regression was performed to show historical downward trends. Results from the Mann-Kendall toolkit (GSI Environmental) and the linear regression can be found in **Appendix F**. Mann-Kendall results show a negative M-K Statistic and a confidence factor of 99%. The SUD-A07-065 linear regression shows a downward trend, and predicts TCE to fall below the GW-1 standard in 2016. With these statistical results, it is confident to claim that TCE will continue on a downward trend in the future, thus SUD-A07-065 can be recommended for reduction in sampling frequency to biennial and removing OHM-A7-51 from the sampling program.

The trend analysis and evaluation conducted as part of the FYR indicates the remedy is effective.

An additional optimization recommendation was for a reduction in VOC analysis to include only COPCs. COPCs include: PCE, TCE, 1,1,2,2-tetrachloroethene, cis-1,2-dichloroethene and trans-1,2-dichloroethene.

Also the optimization evaluation recommended to remove metals analyses from the fall 2016 LTM program. The Interstate Technology and Regulator Council (ITRC) guidance for groundwater monitoring module evaluation indicates metals can be removed from the analyte list. ITRC recommends confirmation sampling to be conducted every 5 years until end of post closure care (PCC). Analyte list can be modified per 310 CMR 19.132(1)(H).

6.5.4 Early Indications of Potential Remedy Failure

No indications of remedy failure have been observed to date. As described above, the remedy is generally functioning as intended. Effectiveness is evaluated regularly as part of system O&M and the LTMMP.

6.5.5 Implementation of Institutional Controls and Other Measures

ROD ICs are in place and functioning properly. During annual site inspections conducted by USACE and EPA personnel, no changes to land use were observed at AOC A7 and the fence surrounding the landfill prevents access to the property. The environmental monitoring and O&M component of the remedy includes repair and maintenance of the cap, security fence and monitoring wells. The security fence was

observed to have minor damage due to tree fall in 2015, but was secure. No repairs were necessary to the cap, monitoring wells or access road. The most recent USACE and EPA inspection included an inspection of the replicated wetland. It was determined the replicated wetland area will be evaluated during the next annual landfill cap-monitoring inspection (2016) to determine the recovery of the mowed woody plants and whether any corrective action is required (e.g. replanting).

Institutional controls prohibiting the use of site groundwater as drinking water at AOCA7 eliminate the ingestion of groundwater exposure pathways. Land use at the AOC A7 has not changed from the presumed future wildlife refuge use evaluated prior to the ROD and is not expected to change. There are provisions in the Memorandum of Agreement (MOA) between the Army and the USFWS dated 28 September 2000 (Weston 2001 - see Appendix D) allowing for the Army to conduct remedial actions at the former annex in general, but in particular, the AOC A7 landfill site is protected by Clause C8 from tampering, described as surface application of water, the use of groundwater, disturbing the parcel by earthworks that would negatively affect any response actions or jeopardize the remedy, activities that might impede the function of the containment design, or any unauthorized work that might be done without the consent of EPA and the Army on the landfill cap itself.

In this MOA, a Site-Wide Institutional Control (1C) dealing with OE is discussed. It states,

The USFWS acknowledges that the Army has informed it that as of the Date of Transfer, the subsurface soil below the depth of4-ft on the Transfer Parcel may contain OE or OE related material as a result of past Army activities on the Transfer Parcel. The USFWS covenants on behalf of itself and its successors and assigns that except as provided herein, no activity or use shall be undertaken on the Transfer Parcel that might disrupt or otherwise negatively impact the subsurface soil below the depth of 4-ft. Such prohibited activities and uses shall include any disturbance of the subsurface soil below the depth of 4-ft in any manner, including but not limited to construction activities such as filling, drilling, excavation or change of topography.

It should be noted that subsurface disturbance below 4 ft. is allowed; however, the Army will not be responsible. The same MOA acknowledges that arsenic-based herbicides were applied to the fence line along Patrol Road.

"...the USFWS acknowledges that the arsenic-based herbicides were applied in the vicinity of the fence line along Patrol Road and on the former railroad beds on the northern and southern portions of the Sudbury Training Annex, and that the Army has concluded, after completing a facility-wide investigation, that the resulting concentrations of arsenic in the soil do not pose an unacceptable risk to human health or the environment based on the future use of the Transfer Parcel as a National Wildlife Refuge. The USFWS covenants on behalf of itself and its successors and assigns that no portion of a 50-ft strip of land on either side of the center of the above-described fence line or former railroad beds shall be used for residential habitation unless the then owner of the Transfer Parcel can demonstrate to USEPA that such use is consistent with the protection of human health and the environment. "

The residual concentrations of arsenic in soil did not represent an unacceptable risk to human health or the environment based on use of the land as a refuge. This institutional control is valid for all sites along Patrol Road (including AOC A7 and the adjacent P9 and A9) and the former railroad beds on the Annex.

Per the MOA, P31 and P58 were inspected. No evidence of dumping or land use disturbance was observed. A well was installed by USFWS at AOC A9. The USFWS conducted MEC clearance during drilling as required by the MOA for any digging below 4 feet bgs, thus, complying with site-wide land use control restrictions.

6.5.6 Summary of Technical Assessment

Based on the data reviewed, the response actions related to the Former Sudbury Annex are generally performing as designed and meeting the remedial action objectives. The landfill cap, gas ventilation system, and drainage system achieve the RAOs stated in the ROD. The exposure assumptions, toxicity data, and RAOs used at the time of the remedy are still valid. The RAOs in the 1995 ROD focused on assuring that exposure to COCs does not occur and eliminating the exposure pathway. However, a water supply well (A9WSW) was recently installed at AOC A9The well is not in use at this time. Recently, EPA has identified PFASs as emerging contaminants that need to be evaluated at sites where fire-fighting foams containing these chemicals have been potentially used. A Preliminary Assessment is underway and select AOC A7 locations and the newly installed water supply well at A9 is scheduled to be sampled in August 2016.

6.6 Issues

1. A water supply well was installed by USF&WS at AOC A9, an area that previously had contamination. The institutional controls should prevent these actions from occurring in the future if the groundwater is determined to pose an unacceptable risk. The institutional controls for groundwater should be evaluated and modified if necessary.

2. Hornet nests are blocking gas vents so they cannot be sampled. The gas vents need to be cleaned and the sampled in accordance with the LTMMP.

3.Well SUDWP-A7-0l contained insufficient water to conduct sampling in 2015. The monitoring plan should be evaluated to determine if this well should be replaced.

4. The emerging contaminants, Per- and Polyfluoroalkyl Substances (PFAS), Perchlorate, and 1,4-dioxane may have been disposed of at AOC A7 and AOC A9.

5. In addition, PFAS may have been used at other areas of the site. Impacts from these contaminants must be evaluated to determine if additional actions are warranted.

6. Contaminants in groundwater at AOC A9 were above MCLs at the time of the 1997 OU2 Management of Migration ROD. The current concentrations of contaminants in groundwater are not know. A water supply well was installed by USF & WS at AOC 9 and it is unknown if this well is being impacted by current conditions or could be impacted in the future if used. The current extent of contamination should be characterized and current and future impacts to this water supply well should be evaluated to determine if the well should be utilized.

These issues do not affect current protectiveness, however they do affect the future protectiveness of the site.

6.7 Recommendations and Follow up Actions

The following items are recommended in regards to LTM, O&M, and IC/LUC protection at the Former Sudbury Annex:

1. Implement temporary ICs to ensure the WSW at AOC A9 is not used until a groundwater investigation is completed.

2. Remove Hornet nests in gas vents prior to next sampling round in 2016 and report data in accordance with the LTMMP.

3. The well SUDWP-A7-01 will be redeveloped prior to sampling. At that time it should be determined if a new well should be installed at a deeper depth or sampling should occur during times of a higher water table. A technical memo will be submitted with Army's recommendation.

4. Prepare sampling and analysis plan and implement groundwater sampling for emerging contaminants, including perchlorate, 1,4 dioxane and PFAS at AOC A7 and A9 to determine if these contaminants are currently impacting groundwater at AOC7 and A9.

5. Prepare a PA work plan to determine if PFAS had been used, stored, or disposed of at any other areas of the site in addition to AOC7 and A9.

6. Prepare a work plan to evaluate groundwater at AOC A9 and determine if historical impacts above the MCLs are present and if overburden groundwater could affect the USFWS water supply well currently or in the future. If the groundwater exhibits unacceptable risk revise existing ICs to insure that additional water supply wells are not installed in the future

All of these actions that do not affect current protectiveness, but do affect future protectiveness will be accomplished by the Army. The first three actions (1-3) will be completed by March 30, 2017. The last three actions (4-6) will be completed by September 30, 2017.

6.8 Protectiveness Statement

The remedy at OU1 currently protects human health and the environment because the landfill is capped and the groundwater is not being used as a drinking water supply at any of the AOCs. However, in order for the remedy to be protective in the long term, the following actions need to be taken: 1. Implement temporary ICs to ensure the WSW at AOC A9 is not used until a groundwater investigation is completed.

2. Remove Hornet nests in gas vents prior to next sampling round in 2016 and report data in accordance with the LTMMP.

3. The well SUDWP-A7-01will be redeveloped prior to sampling. At that time it should be determined if a new well should be installed at a deeper depth or sampling should occur during times of a higher water table. A technical memo will be submitted with Army's recommendation.

4. Prepare sampling and analysis plan and implement groundwater sampling for emerging contaminants, including perchlorate, 1,4 dioxane and PFAS at AOC A7 and A9 to determine if these contaminants are currently impacting groundwater at AOC7 and A9..

5. Prepare a PA work plan to determine if PFAS had been used, stored, or disposed of at any other areas of the site in addition to AOC7 and A9.

6. Prepare a work plan to evaluate groundwater at AOC A9 and determine if historical impacts above the MCLs are present and if overburden groundwater could affect the USFWS water supply well currently or in the future. If the groundwater exhibits unacceptable risk revise existing ICs to insure that additional water supply wells are not installed in the future

6.9 Next Review

The next review will be performed within five years of EPA acceptance of this Five-Year Report.



Table 6Groundwater Analytical Results Spring 2011Former Sudbury Training Annex - Landfill at AOC A7

Method	Analyte	Historical Maximum	Q	MCP GW-1 Groundwater Standard	MCP GW-3 Groundwater Standard	Units	OHM-A7-08	Q	OHM-A7-09	Q	OHM-A7-51	Q	OHM-A7-51 Duplicate	Q	JO-A07-M62	Q	SUD-A07-014	Q	SUD-A07-065	Q
VOLATILES	1,1,1,2-Tetrachloroethane	0.5	U	5	50,000	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
(SW846 8260B)	1,1,1-Trichloroethane	0.8		200	20,000	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	1,1,2,2-Tetrachloroethane	31		2	50,000	μg/L	0.50	U	0.50	U	1.2		1.1		0.50	U	0.50	U	3.3	
	1,1,2-Trichloroethane	2		5	50,000	μg/L	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
	1,1-Dichloroethane	0.5	U	70	20,000	μg/L	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
	1,1-Dichloroethene	0.5	U	7	30,000	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	1,1-Dichloropropene	0.5	U	NS	NS	μg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
	1,2,3-Trichlorobenzene	4		NS	NS	μg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
	1,2,3-Trichloropropane	1		NS	NS	μg/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
	1,2,4-Trichlorobenzene	2		70	50,000	μg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
	1,2,4-Trimethylbenzene	3		NS	NS	μg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
	1,2-Dibromo-3-chloropropane																			
	(DBCP)	4		NS	NS	μg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
	1,2-Dibromoethane (EDB)	1.0	U	0.02	50,000	μg/L	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
	1,2-Dichlorobenzene	0.5	U	600	2,000	μg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
	1,2-Dichloroethane	6.7		5	20,000	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.36	J
	1,2-Dichloropropane	0.5	U	5	50,000	μg/L	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U
	1,3,5-Trimethylbenzene	12		NS	NS	μg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
	1,3-Dichlorobenzene	0.5	U	40	50,000	μg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
	1,3-Dichloropropane	0.5	U	NS	NS	μg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
	1,4-Dichlorobenzene	0.5	U	5	8,000	μg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
	2,2-Dichloropropane	0.5	U	NS	NS	μg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
	2-Butanone	25	U	4,000	50,000	μg/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
	2-Chlorotoluene	0.5	U	NS	NS	μg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
	2-Hexanone	10	U	NS	NS	μg/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
	4-Chlorotoluene	1.0	U	NS	NS	μg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
	4-Isopropyltoluene	0.5	U	NS	NS	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	4-Methyl-2-Pentanone (MIBK)	25.0	U	350	50,000	μg/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
	Acetone	25.0	U	6,300	50,000	μg/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
	Benzene	1		5	10,000	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	Bromobenzene	0.5	U	NS	NS	μg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
	Bromochloromethane	0.5	U	NS	NS	μg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
	Bromodichloromethane	0.5	U	3	50,000	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	Bromoform	0.5	U	4	50,000	μg/L	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
	Bromomethane	0.5	U	10	800	μg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
	Carbon Disulfide	1.0	U	NS	NS	μg/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
	Carbon Tetrachloride	0.5	U	5	5,000	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	Chlorobenzene	64		100	1,000	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	2.9	
	Chloroethane	0.5	U	NS	NS	μg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
	Chloroform	300		70	20,000	μg/L	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	1.2	
	Chloromethane	0.5	U	NS	NS	μg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
	cis-1,2-Dichloroethene	19		70	50,000	μg/L	2.6		0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	3.1	
	cis-1,3-Dichloropropene	0.5	U	NS	NS	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U

Table 6Groundwater Analytical Results Spring 2011Former Sudbury Training Annex - Landfill at AOC A7

Method	Analyte	Historical Maximum	Q	MCP GW-1 Groundwater Standard	MCP GW-3 Groundwater Standard	Units	OHM-A7-08	Q	OHM-A7-09	Q	OHM-A7-51	Q	OHM-A7-51 Duplicate	Q	JO-A07-M62	Q	SUD-A07-014	Q	SUD-A07-065	Q
	Dibromochloromethane	0.5	U	2	50,000	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	Dibromomethane	0.5	U	NS	NS	μg/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
	Dichlorodifluoromethane (Freon	0.8																		
	12)			NS	NS	μg/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
	Ethylbenzene	7		700	5,000	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	Hexachlorobutadiene	0.5	U	0.6	3,000	μg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
	Isopropylbenzene	5		NS	NS	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	<i>m,p</i> -Xylene	9		10,000	5,000	μg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
	Methyl tert-Butyl Ether	1.0	U	70	50,000	μg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
	Methylene Chloride	1		5	50,000	μg/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
	Naphthalene	37		140	20,000	μg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
	<i>n</i> -Butylbenzene	4		NS	NS	µg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	<i>n</i> -Propylbenzene	9	-	NS	NS	µg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	<i>o</i> -Xylene	9	-	10,000	5,000	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
	sec -Butylbenzene	3		NS	NS	µg/L	0.50	U	0.43	J	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	Styrene	0.5	U	100	6,000	µg/L	1.0	U	1.0		1.0	U	1.0	U	1.0	U	1.0	U	1.0	
	Tetre shi we sti se s	0.5	U	NS	NS 20,000	µg/L	2.5 E (U	2.5		2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
	Teleane	140	-	3	30,000	µg/L	5.0	TI	0.50		4.0	TT	3.9	TT	0.26	J	0.50	U	15	
	Toluene	26	-	1,000	40,000	µg/L	0.75	U	0.75		0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
	trans -1,2-Dichlerenene	0	TT	100	30,000	µg/L	0.73		0.73		0.73	$\frac{0}{U}$	0.73		0.73	U	0.73		0.00	J
	Trichloroethone	0.5	U	0.4	200	µg/L	0.30	U	0.50		0.30	U	0.30	U	0.50		0.50		0.30	
	Trichlorofluoromethane	40	-	5	5,000	µg/L	0.27	J	0.50	0	0.44	J	0.39	J	0.50	0	0.30	0	4.7	\vdash
	(Freen 11)	7		NS	NS	цσЛ	2.5	II	2.5	II	2.5	I	2.5	I	2.5	Π	2.5	П	2.5	П
	Vinyl Chloride	0.5	II	2	50,000	μg/L μg/I	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
DESTICIDES		0.3	0	0.2	50,000	μg/L μα/Ι	0.053	0	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
(SW846 8081 A)	4,4-DDE	0.48	II	0.2	400	μg/L μg/I	0.033	T	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
(SW040 0001A)	4,4-DDT	0.1	0	0.03	1	μg/L μg/I	0.021	J	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
	Aldrin	0.058	U	0.5	20	μ <u>σ</u> /L	0.02	U	0.02	U	0.02	U	0.04	U	0.02	U	0.07	U	0.04	U
	alpha-BHC	0.030		NS	NS	μ <u>σ</u> /L	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U
	alpha-Chlordane	0.058	U	2	NS	μ <u>σ</u> /L	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U
	beta-BHC	0.058	U	NS	NS	ця/L	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U
	delta-BHC	0.31	-	NS	NS	ug/L	0.02	Ū	0.02	Ū	0.02	Ū	0.02	Ū	0.02	Ū	0.02	Ū	0.02	Ū
	Dieldrin	0.12	U	0.1	0.5	ug/L	0.04	Ū	0.04	Ū	0.04	Ū	0.04	Ū	0.04	Ū	0.04	Ū	0.04	Ū
	Endosulfan I	0.058	Ū	10	2	μg/L	0.02	Ū	0.02	Ū	0.02	Ū	0.02	Ū	0.02	Ū	0.02	Ū	0.02	U
	Endosulfan II	0.12	U	NS	NS	μg/L	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
	Endosulfan sulfate	0.12	U	NS	NS	μg/L	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	UJ
	Endrin	0.12	U	2	5	μg/L	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
	Endrin aldehyde	0.12	U	NS	NS	μg/L	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
	Endrin ketone	0.05	U	NS	NS	μg/L	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
	gamma-BHC (Lindane)	17.0	1	0.2	4	μg/L	0.332		0.02	U	0.077		0.073		0.02	U	0.02	U	0.161	
	gamma-Chlordane	0.058	U	2	NS	μg/L	0.02	U	0.02	Ū	0.02	U	0.02	U	0.02	Ū	0.02	Ū	0.02	U
	Heptachlor	0.058	U	0.4	1.0	μg/L	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U
	Heptachlor epoxide	0.058	U	0.2	2	μg/L	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	Ū	0.02	U
	Hexachlorobenzene	0.06	U	1	6,000	μg/L	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U
	Methoxychlor	0.058	U	40	10	μg/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
	Toxaphene	1.2	U	NS	NS	μ <u>g</u> /L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U

Table 6Groundwater Analytical Results Spring 2011Former Sudbury Training Annex - Landfill at AOC A7

Method	Analyte	Historical Maximum	Q	MCP GW-1 Groundwater Standard	MCP GW-3 Groundwater Standard	Units	OHM-A7-08	Q	OHM-A7-09	Q	OHM-A7-51	Q	OHM-A7-51 Duplicate	Q	JO-A07-M62	Q	SUD-A07-014	Q	SUD-A07-065	Q
TAL METALS	Arsenic	67		10	900	μg/L	5	U	5	U	5	U	5	U	5	U	5	U	5	U
(SW846 6010B)	Barium	376		2,000	50,000	μg/L	42		5	J	10	U	10	U	10	U	10	U	10	U
MERCURY	Cadmium	10	U	5	4	μg/L	5	U	5	U	5	U	5	U	5	U	5	U	5	U
(SW846 7470A)	Chromium	112		100	300	μg/L	10	U	10	U	10	U	10	U	10	U	10	U	10	U
	Copper	86.2		NS	NS	μg/L	10	U	10	U	10	U	10	U	10	U	10	U	10	U
	Iron	135,000		NS	NS	μg/L	230		550		78		78		61		50	U	440	
	Lead	485		15	10	μg/L	10	U	10	U	10	U	10	U	10	U	10	U	10	U
	Manganese	25,100		NS	NS	μg/L	294		890		25		23		8	J	8	J	279	
	Mercury	3.1		2	20	μg/L	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
	Selenium	100	U	50	100	μg/L	10	U	10	U	10	U	10	U	10	U	10	U	10	U
	Silver	5	U	100	7	μg/L	7	U	7	U	7	U	7	U	7	U	7	U	7	U
CYANIDE (SM4500CN-CE)	Cyanide, Total	11		200	30	μg/L	5	U	3	J	5	U	3	J	5	U	5	U	3	J
COD (E410.4)	Chemical Oxygen Demand	190		NS	NS	mg/L	20	U	20	U	20	U	20	U	20	U	20	U	20	U
FIELD	Temperature, initial		•	NS	•	° Celsius	14.77		13.2		13.1		NA	•	13.75		12.29		1302	
PARAMETERS	Temperature, final			NS		° Celsius	15.08		13.14		12.84		NA		12.99		11.28		12.9	
	pH			NS		Std units	4.33		5.06		3.43		NA		5.24		4.69		5.32	
	Specific Conductance			NS		µS/cm	151		126		72		NA		54		158		133	
	ORP/Eh ²			NS		mV	228.8		333.8		223.8		NA		129.3		275.7		351.6	
	Dissolved Oxygen			NS		mg/L	6.07		0.45		1.63		NA		1.57		8.88		0.4	
	Turbidity			NS		NTU	2.2		2.65		0.85		NA		1.33		0.91		0	

Notes:

0.333 Above GW-1 Standard

2.0 U Non-detect results above GW-1 Standard

ug/L - microgram per liter

U - non-detect

J - Estimated result

NS - No standard

NA - Not analyzed

Table 7Groundwater Analytical Results Fall 2011Former Sudbury Training Annex - Landfill at AOC A7

Method	Analyte	Historical Maximum	Q	MCP GW-1 Groundwater Standard	MCP GW-3 Groundwater Standard	Units	OHM-A7-08	Q	OHM-A7-09	Q	OHM-A7-51	Q	OHM-A7-51 Duplicate	Q	JO-A07-M62	Q	SUD-A07-014	Q	SUD-A07-065	Q
VOLATILES	1,1,1,2-Tetrachloroethane	0.5	U	5	50,000	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
(SW846 8260B)	1,1,1-Trichloroethane	0.8		200	20,000	µg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	1,1,2,2-Tetrachloroethane	31		2	50,000	µg/L	0.50	U	0.50	U	0.58		0.56		0.50	U	0.50	U	2.1	
	1,1,2-Trichloroethane	2		5	50,000	μg/L	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
	1,1-Dichloroethane	0.5	U	70	20,000	μg/L	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
	1,1-Dichloroethene	0.5	U	7	30,000	µg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	1,1-Dichloropropene	0.5	U	NS	NS	µg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
	1,2,3-Trichlorobenzene	4		NS	NS	μg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
	1,2,3-Trichloropropane	1		NS	NS	µg/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
	1,2,4-Trichlorobenzene	2		70	50,000	µg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
	1,2,4-Trimethylbenzene	3		NS	NS	µg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
	1,2-Dibromo-3-chloropropane							1												
	(DBCP)	4		NS	NS	μg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
	1,2-Dibromoethane (EDB)	1.0	U	0.02	50,000	µg/L	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
	1,2-Dichlorobenzene	0.5	U	600	2,000	µg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
	1,2-Dichloroethane	6.7		5	20,000	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	1,2-Dichloropropane	0.5	U	5	50,000	µg/L	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U
	1,3,5-Trimethylbenzene	12		NS	NS	µg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
	1,3-Dichlorobenzene	0.5	U	40	50,000	µg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
	1,3-Dichloropropane	0.5	U	NS	NS	μg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
	1,4-Dichlorobenzene	0.5	U	5	8,000	μg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
	2,2-Dichloropropane	0.5	U	NS	NS	μg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
	2-Butanone	25	U	4,000	50,000	μg/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
	2-Chlorotoluene	0.5	U	NS	NS	μg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
	2-Hexanone	10	U	NS	NS	μg/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
	4-Chlorotoluene	1.0	U	NS	NS	μg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
	4-Isopropyltoluene	0.5	U	NS	NS	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	4-Methyl-2-Pentanone (MIBK)		U																	
		25.0		350	50,000	μg/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
	Acetone	25.0	U	6,300	50,000	μg/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
	Benzene	1		5	10,000	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	Bromobenzene	0.5	U	NS	NS	μg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
	Bromochloromethane	0.5	U	NS	NS	μg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
	Bromodichloromethane	0.5	U	3	50,000	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	Bromoform	0.5	U	4	50,000	μg/L	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
	Bromomethane	0.5	U	10	800	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
	Carbon Disulfide	1.0	U	NS	NS	μg/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
	Carbon Tetrachloride	0.5	U	5	5,000	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	Chlorobenzene	64	1	100	1,000	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.53	1
	Chloroethane	0.5	U	NS	NS	μg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
	Chloroform	300		70	20,000	μg/L	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	1.2	U
	Chloromethane	0.5	U	NS	NS	μg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U

Table 7Groundwater Analytical Results Fall 2011Former Sudbury Training Annex - Landfill at AOC A7

Method	Analyte	Historical Maximum	Q	MCP GW-1 Groundwater Standard	MCP GW-3 Groundwater Standard	Units	ОНМ-А7-08	Q	ОНМ-А7-09	Q	OHM-A7-51	Q	OHM-A7-51 Duplicate	Q	JO-A07-M62	Q	SUD-A07-014	Q	SUD-A07-065	Q
	cis-1,2-Dichloroethene	19		70	50,000	μg/L	1.5		0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.95	
	cis-1,3-Dichloropropene	0.5	U	NS	NS	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	Dibromochloromethane	0.5	U	2	50,000	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	Dibromomethane	0.5	U	NS	NS	μg/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
	Dichlorodifluoromethane (Freon																			1
	12)	0.8		NS	NS	μg/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
	Ethylbenzene	7		700	5,000	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	Hexachlorobutadiene	0.5	U	0.6	3,000	μg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
	Isopropylbenzene	5		NS	NS	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	<i>m</i> , <i>p</i> -Xylene	9		10,000	5,000*	μg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
	Methyl tert-Butyl Ether	1.0	U	70	50,000	μg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
	Methylene Chloride	1		5	50,000	μg/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
	Naphthalene	37		140	20,000	μg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
	<i>n</i> -Butylbenzene	4		NS	NS	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	<i>n</i> -Propylbenzene	9		NS	NS	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	o -Xylene	9		10,000	5,000	μg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
	sec -Butylbenzene	3		NS	NS	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	Styrene	0.5	U	100	6,000	μg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
	tert -Butylbenzene	0.5	U	NS	NS	μg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
	Tetrachloroethene	140		5	30,000	μg/L	6.2		0.50	U	2.9		2.8		0.35	J	0.50	U	9.9	
	Toluene	26		1,000	40,000	μg/L	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
	trans-1,2-Dichloroethene	6		100	50,000	μg/L	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
	trans-1,3-Dichloropropene	0.5	U	0.4	200	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	Trichloroethene	40		5	5,000	μg/L	0.22	J	0.50	U	0.35	J	0.34	J	0.50	U	0.50	U	1.3	
	Trichlorofluoromethane																			
	(Freon 11)	7		NS	NS	μg/L	2.5	U	0.53	J	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
	Vinyl Chloride	0.5	U	2	50,000	μg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
PESTICIDES	4,4'-DDD	0.48		0.2	50	μg/L	0.043		0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
(SW846 8081A)	4,4'-DDE	0.1	U	0.05	400	μg/L	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
	4,4'-DDT	0.36		0.3	1	μg/L	0.045		0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
	Aldrin	0.058	U	0.5	20	μg/L	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U
	alpha-BHC	0.042		NS	NS	μg/L	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U
	alpha-Chlordane	0.058	U	2	NS	μg/L	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U
	beta-BHC	0.058	U	NS	NS	μg/L	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U
	delta-BHC	0.31		NS	NS	μg/L	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U
	Dieldrin	0.12	U	0.1	0.5	μg/L	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
	Endosulfan I	0.058	U	10	2	μg/L	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U
	Endosulfan II	0.12	U	NS	NS	μg/L	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
	Endosulfan sulfate	0.12	U	NS	NS	μg/L	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
	Endrin	0.12	U	2	5	μg/L	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
	Endrin aldehyde	0.12	U	NS	NS	μg/L	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
	Endrin ketone	0.05	U	NS	NS	μg/L	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
	gamma-BHC (Lindane)	17.0		0.2	4	μg/L	0.450		0.02	U	0.079		0.02	U	0.02	U	0.02	U	0.101	
	gamma-Chlordane	0.058	U	2	NS	μg/L	0.020	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U
	Heptachlor	0.058	U	0.4	1.0	μg/L	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U
	Heptachlor epoxide	0.058	U	0.2	2	μg/L	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U
	Hexachlorobenzene	0.06	U	1	6,000	μg/L	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	Ū
	Methoxychlor	0.058	U	40	10	μg/L	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
	Toxaphene	1.2	U	NS	NS	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U

Table 7Groundwater Analytical Results Fall 2011Former Sudbury Training Annex - Landfill at AOC A7

Method	Analyte	Historical Maximum	Q	MCP GW-1 Groundwater Standard	MCP GW-3 Groundwater Standard	Units	OHM-A7-08	Q	ОНМ-А7-09	Q	OHM-A7-51	Q	OHM-A7-51 Duplicate	Q	JO-A07-M62	Q	SUD-A07-014	Q	SUD-A07-065	Q
TAL METALS	Aluminum	42,100		NS	NS	μg/L	100	U	100	U	100	U	100	U	100	U	100	U	80	J
(SW846 6010B)	Antimony	5		6	8,000	μg/L	NA		NA		NA		NA		NA		NA		NA	
(SW846 6020A)	Arsenic	67		10	900	μg/L	5	U	5	U	5	U	5	U	5	U	5	U	5	U
MERCURY	Barium	376		2,000	50,000	μg/L	40		2	J	5	J	4	J	4	J	3	J	5	J
(SW846 7470A)	Beryllium	4	U	4	200	μg/L	5	U	5	U	5	U	5	U	5	U	5	U	5	U
	Cadmium	10	U	5	4	μg/L	5	U	5	U	5	U	5	U	5	U	5	U	5	U
	Calcium	40,600		NS	NS	μg/L	17,000		5,500		9,400		9,100		5,600		6,300		9,800	
	Chromium	112		100	300	μg/L	10	U	10	U	10	U	10	U	10	U	10	U	10	U
	Cobalt	132		NS	NS	μg/L	4	J	20	U	20	U	20	U	20	U	20	U	20	U
	Copper	86.2		NS	NS	μg/L	10	U	10	U	10	U	10	U	10	U	10	U	10	U
	Iron	135,000		NS	NS	μg/L	700		60	U	300		300		50	U	50	U	170	
	Lead	485		15	10	μg/L	5	J	10	U	2	J	3	J	10	U	3	J	10	U
	Magnesium	19,300		NS	NS	μg/L	5,000		1,000		2,900		2,800		1,100		1,300		2,600	
	Manganese	25,100		NS	NS	μg/L	447		46		210		206		8	J	6	J	234	
	Mercury	3.1		2	20	μg/L	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
	Nickel	80.4		100	200	μg/L	8	J	25	U	4	J	4	J	25	U	25	U	25	U
	Potassium	16,400		NS	NS	μg/L	4,200		2,000	J	1,900	J	1,800	J	2,200	J	1,100	J	1,900	J
	Selenium	100	U	50	100	μg/L	10	U	10	U	10	U	10	U	10	U	10	U	10	U
	Silver	5	U	100	7	μg/L	7	U	7	U	7	U	7	U	7	U	7	U	7	U
	Sodium	27,200		NS	NS	μg/L	8,000		2,700		5,300		5,200		2,800		30,000		7,300	
	Thallium	2	U	2	3,000	μg/L	0.100	J	0.040	J	0.500	U	0.500	U	0.040	J	0.040	J	0.040	J
	Vanadium	97.2		30	4,000	µg/L	10	U	10	U	10	U	10	U	10	U	10	U	10	U
	Zinc	126		5,000	900	μg/L	50	U	50	U	50	U	50	U	50	U	50	U	50	U
CYANIDE	Courida Tatal	11		200	20		F	TT	5	TT	F	TT	2	т	F	TT	1	т	F	TT
(SN14500CN)	Chamical Owners Damand	11		200 NS	30 NC	µg/L ma/I	<u> </u>		<u> </u>	U	<u> </u>	U	2	J	20		1	J	5	
COD (E410.4)		190		NS NG	IND	nig/L	20	U	20	U	20	U	20	U	20	U	20	U	9.4	J
FIELD	Temperature, initial			NS		° Celsius	12.75		15.83		14.2		NA		14.85		12.85		14.45	
PARAMETERS	Temperature, final			NS		° Celsius	13.08		15.47		14.//		NA		14.56		12.89		14.34	
	pH			NS		Std units	5.28		5.42		5.64		NA		5.44		5.72		5.64	
	Specific Conductance			NS		μS/cm	207		48		89		NA		52		169		120	
	ORP/Eh ²			NS		mV	181.9		134.1		112		NA		-230.4		-172.9		192	
	Dissolved Oxygen			NS		mg/L	1.25		1.1		1.68		NA		1.71		8.9		0.43	
	Turbidity			NS		NTU	7.76		0.35		0.93		NA		1.1		3.02		4.11	

Notes: 0.333

Above GW-1 Standard

ND results above GW-1 Standard

2.0 U ND ug/L - microgram per liter

U - non-detect

J - Estimated result

NS - No standard

NA - Not analyzed

Table 8Groundwater Analytical Results Fall 2012Former Sudbury Training Annex - Landfill at AOC A7

Method	Analyte	Historical Maximum	Q	MCP GW-1 Groundwater Standard	MCP GW-3 Groundwater Standard	Units	OHM-A7-08	Q	OHM-A7-08 DUP1	Q	ОНМ-А7-09	Q	OHM-A7-10	Q	OHM-A7-51	Q	SUD-A07-014	Q	SUD-A07-065	Q
VOLATILES	1 1 1 2 Tetrachloroethane	0.5	T	5	50,000	u a/I	0.500	T	0.500	11	0.500	II	0.500	TT	0.500	II	0.500	TT	0.500	п
(SW8260C)	1 1 1 Trichloroethane	0.3	0	200	30,000	μg/L μg/I	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.300	
	1,1,2,2-Tetrachloroethane	31		200	20,000	μg/L μg/I	0.500	U	0.500	U	0.500	U	0.500	U	0.300	0	0.500	U	0.500 3.14	
	1,1,2,2-Tetrachloroethane	2		5	50,000	μg/L μg/I	0.300	U	0.300	U	0.300	U	0.300	U	0.750	II	0.300	U	0.308	I T
	1,1,2-Themoroethane	0.5	II	70	20,000	μg/L μg/I	0.750	U	0.750	U	0.750	U	0.750	U	0.750	U	0.750	U	0.308	
	1.1-Dichloroethene	0.5	U	7	30,000	μg/L μσ/Ι	0.750	U	0.750	U	0.750	U	0.730	U	0.730	U	0.750	U	0.750	U
	1 1-Dichloropropene	0.5	U	NS	NS	μσ/L	2 50	U	2 50	U	2 50	U	2 50	U	2 50	U	2 50	U	2 50	U
	1.2.3-Trichlorobenzene	4	0	NS	NS	μ <u>σ</u> /L	1 48	J	1.50	I	2.50	U	2.50	U	0.605	J	2.50	U	0.493	I
	1.2.3-Trichloropropane	1		NS	NS	μg/L	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U
	1.2.4-Trichlorobenzene	2		70	50,000	μg/L	1.32	J	1.36	J	2.50	U	2.50	U	0.242	J	2.50	U	0.326	I
	1.2.4-Trimethylbenzene	3		NS	NS	ug/L	2.50	U	2.50	U	2.50	Ū	2.50	Ū	2.50	U	2.50	Ū	2.50	U
	1.2-Dibromo-3-chloropropane (DBCP)	4		NS	NS	ug/L	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U
	1.2-Dibromoethane (EDB)	1.0	U	0.02	50,000	μg/L	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U
	1,2-Dichlorobenzene	0.5	U	600	2,000	μg/L	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U
	1,2-Dichloroethane	6.7	1	5	20,000	μg/L	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.641	1
	1,2-Dichloropropane	0.5	U	5	50,000	μg/L	1.75	U	1.75	U	1.75	U	1.75	U	1.75	U	1.75	U	1.75	U
	1,3,5-Trimethylbenzene	12		NS	NS	μg/L	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U
	1,3-Dichlorobenzene	0.5	U	40	50,000	μg/L	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U
	1,3-Dichloropropane	0.5	U	NS	NS	μg/L	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U
	1,4-Dichlorobenzene	0.5	U	5	8,000	μg/L	0.249	J	0.252	J	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U
	2,2-Dichloropropane	0.5	U	NS	NS	μg/L	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U
	2-Butanone	25	U	4,000	50,000	μg/L	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U
	2-Chlorotoluene	0.5	U	NS	NS	μg/L	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U
	2-Hexanone	10	U	NS	NS	μg/L	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U
	4-Chlorotoluene	1.0	U	NS	NS	μg/L	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U
	4-Isopropyltoluene	0.5	U	NS	NS	μg/L	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
	4-Methyl-2-Pentanone (MIBK)	25.0	U	350	50,000	μg/L	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U
	Acetone	25.0	U	6,300	50,000	μg/L	5.00	U	5.00	U	5.00	U	5.00	U	3.89	J	5.00	U	5.00	U
	Benzene	1		5	10,000	μg/L	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
	Bromobenzene	0.5	U	NS	NS	μg/L	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U
	Bromochloromethane	0.5	U	NS	NS	μg/L	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U
	Bromodichloromethane	0.5	U	3	50,000	μg/L	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
	Bromoform	0.5	U	4	50,000	μg/L	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U
	Bromomethane	0.5	U	10	800	μg/L	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
	Carbon Disulfide	1.0	U	NS	NS	μg/L	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U
	Carbon Tetrachloride	0.5	U	5	5,000	μg/L	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
	Chlorobenzene	64	 	100	1,000	μg/L	2.66		2.66	\square	0.422	J	0.500	U	0.500	U	0.500	U	1.29	┶
	Chloroethane	0.5	U	NS	NS	μg/L	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
	Chloroform	300		70	20,000	μg/L	0.750	U	0.750	U	0.750	U	0.750	U	0.750	U	0.750	U	0.586	J
	Chloromethane	0.5	U	NS	NS	μg/L	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U

Table 8Groundwater Analytical Results Fall 2012Former Sudbury Training Annex - Landfill at AOC A7

				MCP GW-1	MCP GW-3															
Method	Analyte	Historical	Q	Groundwater	Groundwater	Units	OHM-A7-08	Q	OHM-A7-08	Q	OHM-A7-09	Q	OHM-A7-10	Q	OHM-A7-51	Q	SUD-A07-014	Q	SUD-A07-065	Q
		Maximum		Standard	Standard				DUPI											
	cis-1,2-Dichloroethene	19		70	50,000	μg/L	4.19		4.03		0.227	J	0.500	U	0.283	J	0.500	U	4.36	
	cis-1,3-Dichloropropene	0.5	U	NS	NS	μg/L	0.500	U	0.500	U	0.500	U								
	Dibromochloromethane	0.5	U	2	50,000	μg/L	0.500	U	0.500	U	0.500	U								
	Dibromomethane	0.5	U	NS	NS	μg/L	5.00	U	5.00	U	5.00	U								
	Dichlorodifluoromethane	0.8		NS	NS	ug/I	5.00	п	5.00	T	5.00	II	5.00	П	5.00	II	5.00	II	5.00	II
	(Freon 12)	0.8		115	145	µg/L	5.00	0	5.00	0	5.00	0	5.00	0	5.00	0	5.00	0	5.00	0
	Ethylbenzene	7		700	5,000	μg/L	0.500	U	0.500	U	0.500	U								
	Hexachlorobutadiene	0.5	U	0.6	3,000	μg/L	1.00	U	1.00	U	1.00	U								
	Isopropylbenzene	5		NS	NS	μg/L	0.500	U	0.500	U	0.500	U								
	<i>m</i> , <i>p</i> -Xylene	9		10,000	5,000	μg/L	1.00	U	1.00	U	1.00	U								
	Methyl tert-butyl ether	1.0	U	70	50,000	μg/L	1.00	U	1.00	U	1.00	U								
	Methylene Chloride	1		5	50,000	μg/L	5.00	U	5.00	U	5.00	U								
	Naphthalene	37		140	20,000	μg/L	2.50	U	2.50	U	0.340	J	2.50	U	2.50	U	2.50	U	2.50	U
	<i>n</i> -Butylbenzene	4		NS	NS	μg/L	0.264	J	0.244	J	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
	n -Propylbenzene	9		NS	NS	μg/L	0.500	U	0.500	U	0.500	U								
	o -Xylene	9		10,000	5,000	μg/L	1.00	U	1.00	U	1.00	U								
	sec -Butylbenzene	3		NS	NS	μg/L	0.726		0.740		0.452	J	0.500	U	0.500	U	0.500	U	0.500	U
	Styrene	0.5	U	100	6,000	μg/L	1.00	U	1.00	U	1.00	U								
	tert -Butylbenzene	0.5	U	NS	NS	μg/L	2.50	U	2.50	U	2.50	U								
	Tetrachloroethene	140		5	30,000	μg/L	8.18		8.26		0.239	J	0.500	U	3.56		0.500	U	13.2	<u> </u>
	Toluene	26		1,000	40,000	μg/L	0.750	U	0.750	U	0.750	U								
	trans -1,2-Dichloroethene	6		100	50,000	μg/L	0.750	U	0.750	U	0.996									
	trans -1,3-Dichloropropene	0.5	U	0.4	200	μg/L	0.500	U	0.500	U	0.500	U								
	Trichloroethene	40		5	5,000	μg/L	0.395	J	0.382	J	0.500	U	0.500	U	0.878		0.500	U	6.77	
	Trichlorofluoromethane	7		NS	NS	μg/L	2.50	U	2.50	U	2.50	U	2.50	U	0.365	J	2.50	U	2.50	U
	(Freon 11)	0.5	TT	2	50.000	u a/I	1.00	TI	1.00	TT	1.00	TT	1.00	TI	1.00	TT	1.00	TT	1.00	TI
DECEMPTO		0.5	U	2	50,000	µg/L	1.00	U	1.00	U	1.00	U								
PESTICIDES	4,4'-DDD	0.48	TT	0.2	50	µg/L	0.049	J	0.055	J	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U
(SW8081B)	4,4-DDE	0.1	U	0.05	400	µg/L	0.023	J	0.017	J	0.040	U	0.040	U	0.040	U	0.040	U	0.012	J
	4,4-DD1	0.30	II	0.5	1	µg/L	0.035	J	0.038	J	0.040	U	0.040	U	0.040	U	0.040	U	0.040	
	Aluliii	0.038	U	0.5 NS	20 NS	µg/L	0.020	U	0.020	U	0.020	U								
	alpha Chlordana	0.042	II	2	2	µg/L	0.017	J	0.022	J	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U
	hota PHC	0.058	U	Z NS	Z NS	µg/L	0.020	U	0.020	U	0.020									
	delta BHC	0.038	0	NS	NS	μg/L μg/Ι	0.020	U	0.020	U	0.020	U								
	Dieldrin	0.12	II	0.1	0.5	μg/L μg/Ι	0.020	U	0.020	U	0.020	U								
	Endosulfan I	0.058	U	10	0.5	μg/L μg/Ι	0.040	U	0.020	U	0.040	U								
	Endosulfan I	0.038	U	NS	2 NS	μg/L μg/I	0.020	U	0.020	U	0.020									
	Endosulfan sulfate	0.12	U	NS	NS	μg/L	0.040	U	0.040	U	0.040	U								
	Endrin	0.12	U	2	5	μg/L	0.040	U	0.040	U	0.040	U								
	Endrin aldehyde	0.12	U	NS	NS	μg/L	0.040	U	0.040	U	0.040	U								
	Endrin ketone	0.05	U	NS	NS	μg/L μg/I	0.040	U	0.040	U	0.040	U								
	gamma PUC (Lindana)	17.0		0.2	115	μg/L μα/Ι	0.520	0	0.594	0	0.070	U	0.070	11	0.090	0	0.020	U	0.040	
	gamma Chlordana	17.0	TT	0.2	4	μg/L	0.020	TT	0.020	ΤT	0.020	U	0.020	U	0.082	TT	0.020	U	0.020	TT
	ganna-Unoruane Hantachlar	0.058	U	2	<u>∠</u> 1	μg/L	0.020	U	0.020	U	0.020									
	Hentachlor enovide	0.058	U	0.4	1	μg/L	0.020	U	0.020	U	0.020									
	Heyachlorobenzene	0.056	U	0.2	<u> </u>	μg/L	0.020	U	0.020	U	0.020									
	Methowychlor	0.00	U	1	10	μg/L	0.020	U	0.020	U	0.020									
	Toyaphene	0.058	U	40 NS	10 NS	μg/L	0.200	U	0.200	U	0.200									
	roxaphene	1.2	U	CM1	СИ1	µg/L	0.300	U	0.300	U	0.300									

Table 8Groundwater Analytical Results Fall 2012Former Sudbury Training Annex - Landfill at AOC A7

Method	Analyte	Historical Maximum	Q	MCP GW-1 Groundwater Standard	MCP GW-3 Groundwater Standard	Units	OHM-A7-08	Q	OHM-A7-08 DUP1	Q	OHM-A7-09	Q	OHM-A7-10	Q	OHM-A7-51	Q	SUD-A07-014	Q	SUD-A07-065	Q
TAL METALS	Aluminum	42,100		NS	NS	μg/L	100	U	20	J	40	J	50	J	40	J	100	U	10	U
(SW6010C/	Antimony	5	U	6	8,000	μg/L	0.661	U	0.500	U	0.500	U	1.084	U	0.500	U	1.041	U	0.500	U
SW6020A)	Arsenic	67		10	900	μg/L	5	U	5	U	5	U	5	U	5	U	5	U	5	U
MERCURY (SW7470A)	Barium	376		2,000	50,000	μg/L	36		34		6	J	5	J	6	J	4	J	8	J
	Beryllium	4	U	4	200	μg/L	5	U	5	U	5	U	5	U	5	U	5	U	5	U
	Cadmium	10	U	5	4	μg/L	1	J	1	J	5	U	5	U	5	U	5	U	5	U
	Calcium	40,600		NS	NS	μg/L	23,000		22,000		15,000		6,300		12,000		5,300		15,000	
	Chromium	112		100	300	μg/L	10	U	2	J	10	U	10	U	10	U	10	U	10	U
	Cobalt	132		NS	NS	μg/L	30		29		5	J	20	U	20	U	20	U	20	U
	Copper	86.2		NS	NS	μg/L	10	U	10	U	10	U	10	U	10	U	10	U	10	U
	Iron	135,000		NS	NS	μg/L	2,400		2,200		1,200		460		640		50	U	170	
	Lead	485		15	10	μg/L	10	U	10	U	10	U	10	U	10	U	10	U	10	U
	Magnesium	19,300		NS	NS	μg/L	6,000		5,800		3,000		990		3,800		1,300		4,200	
	Manganese	25,100		NS	NS	μg/L	2,150		2,110		1,160		35		52		18	U	192	
	Mercury	3.1		2	20	μg/L	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
	Nickel	80.4		100	200	μg/L	15	J	15	J	25	U	25	U	25	U	6	J	25	U
	Potassium	16,400		NS	NS	μg/L	5,000		4,900		4,100		2,000	J	2,300	J	1,500	J	3,000	
	Selenium	100	U	50	100	μg/L	10	U	10	U	10	U	10	U	10	U	10	U	10	U
	Silver	5	U	100	7	μg/L	7	U	7	U	7	U	7	U	7	U	7	U	7	U
	Sodium	27,200		NS	NS	μg/L	9,600		9,100		6,200		3,300		7,600		24,000		9,600	
	Thallium	2	U	2	3,000	μg/L	0.175	J	0.185	J	0.500	U	0.041	J	0.500	U	0.033	J	0.500	U
	Vanadium	97.2		30	4,000	μg/L	10	U	10	U	10	U	10	U	10	U	10	U	10	U
	Zinc	126		5,000	900	μg/L	50	U	50	U	50	U	50	U	50	U	50	U	50	U
CYANIDE (SM4500CN)	Cyanide, Total	11		200	30	μg/L	2	J	1	J	5	U	5	U	5	U	2	J	5	U
COD (E410.4)	Chemical Oxygen Demand	190		NS	NS	mg/L	13	J	15	J	13	J	20	U	20	U	20	U	20	U
FIELD PARAMETERS	Temperature, initial			NS		° Celsius	12.06		NA		14.26		11.59		14.07		14.37		13.42	
	Temperature, final			NS		° Celsius	12.35		NA		13.83		12		14.81		14.30		13.52	
	pH			NS		Std units	5.76		NA		5.67		5.45		5.89		5.92		6.01	
	Specific Conductance			NS		µS/cm	127		NA		104		38		76		138		106	
	ORP/Eh ²			NS		mV	90.0		NA		176.4		290.5		181.0		165.5		282.7	
	Dissolved Oxygen			NS		mg/L	0.85		NA		0.31		1.32		0.86		2.5		1.25	
	Turbidity			NS		NTU	9.21		NA		1.86		6.02		3.63		94		4.11	

Notes:

Above GW-1 Standard

ND results above GW-1 Standard

NA = Not analyzed

0.529

2.0 U

NS = No standard

Table 9Groundwater Analytical Results Fall 2013Former Sudbury Training Annex - Landfill at AOC A7

Method	Analyte	Historical Maximum	MCP GW-1 Groundwater Standard	MCP GW-3 Groundwater Standard	Units	OHM-A7-08	Q	ОНМ-А7-09	Q	OHM-A7-51	Q	A7-DUP1 Duplicate of OHM- A7-51	Q	SUD-A07-014	Q	SUD-A07-065	Q	SUDWP-A07-01	Q
VOLATILES																			
(SW8260C)	1,1,1,2-Tetrachloroethane	0.5	5	50,000	μg/L	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
	1,1,1-Trichloroethane	0.8	200	20,000	μg/L	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
	1,1,2,2-Tetrachloroethane	31	2	50,000	μg/L	0.500	U	0.500	U	1.22		1.53		0.500	U	2.34		0.500	U
	1,1,2-Trichloroethane	2	5	50,000	μg/L	0.750	U	0.750	U	0.750	U	0.750	U	0.750	U	0.173	J	0.750	U
	1,1-Dichloroethane	0.5	70	20,000	μg/L	0.750	U	0.750	U	0.750	U	0.750	U	0.750	U	0.750	U	0.750	U
	1,1-Dichloroethene	0.5	7	30,000	μg/L	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
	1,1-Dichloropropene	0.5	NS	NS	μg/L	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U
	1,2,3-Trichlorobenzene	4	NS	NS	µg/L	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U
	1,2,3-Trichloropropane	1	NS	NS	µg/L	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U
	1,2,4-Trichlorobenzene	2	70	50,000	µg/L	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U
	1,2,4-Trimethylbenzene	3	NS	NS	μg/L	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U
	1,2-Dibromo-3-chloropropane (DBCP)	4	NS	NS	µg/L	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U
	1,2-Dibromoethane (EDB)	1.0	0.02	50,000	μg/L	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U
	1,2-Dichlorobenzene	0.5	600	2,000	µg/L	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U
	1,2-Dichloroethane	6.7	5	20,000	μg/L	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.815		2.50	U
	1,2-Dichloropropane	0.5	5	50,000	μg/L	1.75	U	1.75	U	1.75	U	1.75	U	1.75	U	1.75	U	1.75	U
	1,3,5-Trimethylbenzene	12	NS	NS	µg/L	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U
	1,3-Dichlorobenzene	0.5	40	50,000	μg/L	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U
	1,3-Dichloropropane	0.5	NS	NS	μg/L	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U
	1,4-Dichlorobenzene	0.5	5	8,000	µg/L	0.234	J	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U
	2,2-Dichloropropane	0.5	NS	NS	µg/L	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U
	2-Butanone	25	4,000	50,000	μg/L	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U
	2-Chlorotoluene	0.5	NS	NS	μg/L	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U
	2-Hexanone	10	NS	NS	μg/L	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U
	4-Chlorotoluene	1.0	NS	NS	µg/L	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U
	4-Isopropyltoluene	0.5	NS	NS	µg/L	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
	4-Methyl-2-Pentanone (MIBK)	25.0	350	50,000	µg/L	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U
	Acetone	25.0	6,300	50,000	μg/L	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U
	Benzene	1	5	10,000	µg/L	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
	Bromobenzene	0.5	NS	NS	µg/L	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U
	Bromochloromethane	0.5	NS	NS	µg/L	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U
	Bromodichloromethane	0.5	3	50,000	µg/L	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
	Bromoform	0.5	4	50,000	µg/L	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U
	Bromomethane	0.5	10	800	µg/L	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
	Carbon Disulfide	1.0	NS	NS	µg/L	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U
	Carbon Tetrachloride	0.5	5	5,000	µg/L	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
	Chlorobenzene	64	100	1,000	μg/L	2.33		0.270	J	0.500	U	0.500	U	0.500	U	1.16		0.500	U
	Chloroethane	0.5	NS	NS	μg/L	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
	Chloroform	300	70	20,000	μg/L	0.750	U	0.750	U	0.750	U	0.750	U	0.750	U	0.817		0.293	J
	Chloromethane	0.5	NS	NS	μg/L	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U

Table 9Groundwater Analytical Results Fall 2013Former Sudbury Training Annex - Landfill at AOC A7

Method	Analyte	Historical Maximum	MCP GW-1 Groundwater Standard	MCP GW-3 Groundwater Standard	Units	OHM-A7-08	Q	ОНМ-А7-09	Q	OHM-A7-51	Q	A7-DUP1 Duplicate of OHM- A7-51	Q	SUD-A07-014	Q	SUD-A07-065	Q	SUDWP-A07-01	Q
	cis-1,2-Dichloroethene	19	70	50,000	µg/L	4.90		0.500	U	0.262	J	0.238	J	0.500	U	5.09		0.500	U
	cis-1,3-Dichloropropene	0.5	NS	NS	µg/L	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
	Dibromochloromethane	0.5	2	50,000	µg/L	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
	Dibromomethane	0.5	NS	NS	µg/L	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U
	Dichlorodifluoromethane	0.8	NS	NS	ug/I	5.00	II	5.00	TI	5.00	II	5.00	П	5.00	II	5.00	П	5.00	T
	(Freon 12)	0.8	INS .	IND	µg/L	5.00	U	5.00	U	5.00	0	5.00	U	5.00	0	5.00	0	5.00	0
	Ethylbenzene	7	700	5,000	μg/L	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
	Hexachlorobutadiene	0.5	0.6	3,000	μg/L	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
	Isopropylbenzene	5	NS	NS	µg/L	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
	<i>m,p</i> -Xylene	9	10,000	5,000	µg/L	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
	Methyl tert-butyl ether	1.0	70	50,000	μg/L	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
	Methylene Chloride	1	5	50,000	μg/L	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U
	Naphthalene	37	140	20,000	µg/L	2.50	U	2.500	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U
	<i>n</i> -Butylbenzene	4	NS	NS	µg/L	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
	<i>n</i> -Propylbenzene	9	NS	NS	μg/L	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
	<i>o</i> -Xylene	9	10,000	5,000	μg/L	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
	sec -Butylbenzene	3	NS	NS	μg/L	0.542		0.394	J	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
	Styrene	0.5	100	6,000	µg/L	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
	tert-Butylbenzene	0.5	NS	NS	μg/L	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U
	Tetrachloroethene	140	5	30,000	μg/L	7.46		0.500	U	4.33		4.08		0.500	U	14		1.00	\bot
	Toluene	26	1,000	40,000	µg/L	0.750	U	0.750	U	0.750	U	0.750	U	0.750	U	0.750	U	0.550	J
	trans-1,2-Dichloroethene	6	100	50,000	μg/L	0.750	U	0.750	U	0.750	U	0.750	U	0.750	U	1.37	\square'	0.500	U
	trans-1,3-Dichloropropene	0.5	0.4	200	μg/L	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
	Trichloroethene	40	5	5,000	μg/L	0.306	J	0.500	U	0.892		0.833		0.500	U	8.35		0.500	U
	Trichlorofluoromethane (Freon 11)	7	NS	NS	μg/L	2.50	U	2.50	U	2.500	U	0.344	J	2.50	U	0.219	J	2.50	U
	Vinyl Chloride	0.5	2	50,000	µg/L	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
PESTICIDES	4,4'-DDD	0.48	0.2	50	μg/L	0.045	J	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U
(SW8081B)	4,4'-DDE	0.1	0.05	400	μg/L	0.009	J	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U
	4,4'-DDT	0.36	0.3	1	μg/L	0.047		0.040	U	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U
	Aldrin	0.058	0.5	20	μg/L	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U
	alpha-BHC	0.042	NS	NS	μg/L	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U
	alpha-Chlordane	0.058	2	2	μg/L	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U
	beta-BHC	0.058	NS	NS	µg/L	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U
	delta-BHC	0.31	NS	NS	µg/L	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U
	Dieldrin	0.12	0.1	0.5	μg/L	0.009	J	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U
	Endosulfan I	0.058	10	2	μg/L	0.020	U	0.020	U	0.020	U	0.020	U	0.114		0.020	U	0.106	
	Endosulfan II	0.12	NS	NS	μg/L	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U
	Endosulfan sulfate	0.12	NS	NS	μg/L	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U
	Endrin	0.12	2	5	μg/L	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U
	Endrin aldehyde	0.12	NS	NS	µg/L	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U
	Endrin ketone	0.05	NS	NS	µg/L	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U	0.040	U
	gamma-BHC (Lindane)	17.0	0.2	4	µg/L	0.366		0.020	U	0.064		0.068		0.020	U	0.241		0.020	U
	gamma-Chlordane	0.058	2	2	μg/L	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U
	Heptachlor	0.058	0.4	1	µg/L	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U
	Heptachlor epoxide	0.058	0.2	2	μg/L	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U
	Hexachlorobenzene	0.06	1	6,000	μg/L	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U	0.020	U
	Methoxychlor	0.058	40	10	μg/L	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
	Toxaphene	1.2	NS	NS	μg/L	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U

Table 9Groundwater Analytical Results Fall 2013Former Sudbury Training Annex - Landfill at AOC A7

Method	Analyte	Historical Maximum	MCP GW-1 Groundwater Standard	MCP GW-3 Groundwater Standard	Units	OHM-A7-08	Q	ОНМ-А7-09	Q	OHM-A7-51	Q	A7-DUP1 Duplicate of OHM- A7-51	Q	SUD-A07-014	Q	SUD-A07-065	Q	SUDWP-A07-01	Q
TAL METALS	Aluminum	42,100	NS	NS	μg/L	100	U	80	J	30	J	100	U	1.5		10	U	50	J
(SW6010C/	Antimony	5	6	8,000	μg/L	2.428		1.309	U	1.0	U	1.000	U	1.0	U	1.255	U	1.0	U
SW6020A)	Arsenic	67	10	900	μg/L	5	U	5	U	5	U	5	U	5	U	5	U	5	U
MERCURY	Barium	376	2,000	50,000	μg/L	26		6	J	5	J	4	J	19		5	J	8	J
(SW7470A)	Beryllium	4	4	200	μg/L	5	U	5	U	5	U	5	U	5	U	5	U	5	U
	Cadmium	10	5	4	μg/L	5	U	5	U	5	U	5	U	5	U	5	U	5	U
	Calcium	40,600	NS	NS	μg/L	18,000		13,000		10,000		10,000		8,300		13,000		4,800	
	Chromium	112	100	300	μg/L	10	U	10	U	10	U	10	U	5.4	J	10	U	10	U
	Cobalt	132	NS	NS	μg/L	19	J	20	U	20	U	20	U	7	J	20	U	7	J
	Copper	86.2	NS	NS	μg/L	10	U	10	U	10	U	10	Ι	10	U	10	U	10	U
	Iron	135,000	NS	NS	μg/L	1,000		480		140	J	80	J	2,800		50		220	
	Lead	485	15	10	μg/L	10	U	10	U	10	U	10	U	10	U	10	U	10	U
	Magnesium	19,300	NS	NS	μg/L	5,700		3,000		3,800		3,700		2,900		4,000		1,000	
	Manganese	25,100	NS	NS	μg/L	1,260		979		20	J	14	J	196		45		358	
	Mercury	3.1	2	20	μg/L	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
	Nickel	80.4	100	200	μg/L	12	J	25	U	25	U	25	U	15	J	25	U	25	U
	Potassium	16,400	NS	NS	μg/L	3,500		3,400		1,800	J	1,800	J	2,700		2,400	J	1,800	J
	Selenium	100	50	100	μg/L	10	U	10	U	10	U	10	U	10	U	10	U	10	U
	Silver	5	100	7	μg/L	7	U	7	U	7	U	7	U	7	U	7	U	7	U
	Sodium	27,200	NS	NS	μg/L	7,600		5,100		6,200		6,100		29,000		7,800		2,600	
	Thallium	2	2	3,000	μg/L	0.147	J	84.0	J	0.500	U	0.500	U	0.055	J	0.500	U	0.500	J
	Vanadium	97.2	30	4,000	μg/L	10	U	10	U	10	U	10	U	4	J	10	U	10	U
	Zinc	126	5,000	900	μg/L	50	U	50	U	50	U	50	U	50	U	50	U	2,040	
CYANIDE (SM4500CN)	Cyanide, Total	11	200	30	μg/L	5	U	5	U	5	U	5	U	5	U	5	U	5	U
COD (E410.4)	Chemical Oxygen Demand	190	NS	NS	mg/L	20	U	20	U	20	U	20	U	20	U	20	U	20	U
FIELD PARAMETERS	Temperature, initial		NS	•	° Celsius	11.26		13.2		12.47				10.74		11.98	-	12.8	
	Temperature, final		NS		° Celsius	11.27		13.02		12.82		1	Г	10.59		11.84		12.8	
	pH		NS		Std units	5.73		5.37		5.79			ſ	5.67		6.04		5.67	
	Specific Conductance		NS		µS/cm	131		108		103		NA	ſ	136		144		71	
	ORP/Eh ²		NS		mV	170.8		175.2		172.6]	ſ	240.1		122.7		60.5	
	Dissolved Oxygen		NS		mg/L	1.86		3.67		0.66		1	ŀ	2.78		2.62		0.61	
	Turbidity		NS		NTU	9.33		2.9		3.13		1	F	11.1		0.44		2.46	

Notes:

0.366 2.0 U = Cleanup goal exceedance

ND results above GW-1 Standard

NA = Not analyzed NS = No standard

Table 10Groundwater Analytical Results Fall 2014Former Sudbury Training Annex - Landfill at AOC A7

Method	Analyte	Historical Maximum	MCP GW-1 Groundwater Standard	MCP GW-3 Groundwater Standard	Units	OHM-A7-08	Q	A7-DUP01 Duplicate of OHM- A7-08	Q	SUD-A07-014	Q	SUD-A07-065	Q	OHM-A7-51	Q	SUDWP-A07-01	Q	A7-TRIP BLANK	Q	A7-RB	Q
VOLATILES	Acetone	25.0	6,300	50,000	μg/L	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U
(SW8260C)	Benzene	1	5	10,000	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	Bromobenzene	0.5	NS	NS	μg/L	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
	Bromochloromethane	0.5	NS	NS	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	Bromodichloromethane	0.5	3	50,000	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	Bromoform	0.5	4	50,000	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	Bromomethane	0.5	10	800	μg/L	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
	2-Butanone	25	4,000	50,000	μg/L	5.00	U	5.00	U	5.00	U	5.00	U	5.00	UJ	5.00	U	5.00	U	5.00	U
	n -Butylbenzene	4	NS	NS	μg/L	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U
	sec -Butylbenzene	3	NS	NS	μg/L	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
	tert -Butylbenzene	0.5	NS	NS	μg/L	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
	Carbon Disulfide	1.0	NS	NS	μg/L	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
	Carbon Tetrachloride	0.5	5	5,000	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	Chlorobenzene	64	100	1,000	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	Chloroethane	0.5	NS	NS	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	Chloroform	300	70	20,000	μg/L	0.50	U	0.50	U	0.50	U	0.78		0.50	U	0.92		0.50	U	0.50	U
	Chloromethane	0.5	NS	NS	μg/L	1.00	U	1.00	U	1.00	U	1.00	U	1.00	UJ	1.00	U	1.00	U	1.00	U
	2-Chlorotoluene	0.5	NS	NS	μg/L	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
	4-Chlorotoluene	1.0	NS	NS	μg/L	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
	cis -1,2-Dichloroethene	19	70	50,000	μg/L	0.50	U	5.00		0.50	U	4.50	U	0.50	U	0.50	U	0.50	U	3.80	
	cis -1,3-Dichloropropene	0.5	NS	NS	μg/L	2.00	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	Dibromochloromethane	0.5	2	50,000	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	Dibromomethane	0.5	NS	NS	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	Dichlorodifluoromethane (Freon 12)	0.8	NS	NS	μg/L	1.00	U	0.50	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
	1,2-Dibromo-3-chloropropane																				
	(DBCP)	4	NS	NS	μg/L	1.00	U	1.00	U	1.00	U	1.00	U	1.00	UJ	1.00	U	1.00	U	1.00	U
	1,2-Dibromoethane (EDB)	1.0	0.02	50,000	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	1,2-Dichlorobenzene	0.5	600	2,000	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	1,2-Dichloroethane	6.7	5	20,000	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	1,2-Dichloropropane	0.5	5	50,000	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	1,3-Dichlorobenzene	0.5	40	50,000	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	1,3-Dichloropropane	0.5	NS	NS	μg/L	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U
	1,4-Dichlorobenzene	0.5	5	8,000	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	2,2-Dichloropropane	0.5	NS	NS	μg/L	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U
	1,1-Dichloroethane	0.5	70	20,000	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	1,1-Dichloroethene	0.5	7	30,000	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	trans -1,2-Dichloroethene	6	100	50,000	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	trans -1,3-Dichloropropene	0.5	0.4	200	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	1,1-Dichloropropene	0.5	NS	NS	μg/L	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U

Table 10Groundwater Analytical Results Fall 2014Former Sudbury Training Annex - Landfill at AOC A7

Method	Analyte	Historical Maximum	MCP GW-1 Groundwater	MCP GW-3 Groundwater	Units	OHM-A7-08	Q	A7-DUP01 Duplicate of	Q	SUD-A07-014	Q	SUD-A07-065	Q	OHM-A7-51	Q	SUDWP-A07-01	Q	A7-TRIP BLANK	Q	A7-RB	Q
	Educile on a constant of the second	7	Standard	5 000		0.50	TT	0.50	TT	0.500	TT	0.50	TT	0.50	TT	0.50	TT	0.50	TT	0.50	TT
	Ethylbenzene	/	/00	3,000	μg/L u α/I	0.50	U	0.50		0.500		0.50		0.50		0.50		0.50	U	0.50	
		0.5	0.0 NS	5,000 NS	µg/L	2.00		2.00	U	2.00		2.00	U	2.00	U	2.00	U	2.00	U	2.00	
			INS NC	INS	µg/L	1.00	U	5.00	U	5.00	U	1.00	U	1.00	U	1.00	U	1.00	U	5.00	U
	2-Hexanone	10	INS NC	INS	µg/L	5.00 NA	U	5.00	U	5.00	U	3.00	U	3.00	U	3.00	U	3.00	U	3.00	U
	4 Mathyl 2 Deptenone (MIDK)	0.5	250	50,000	μg/L μα/I	1NA 2.00	T	2.00	U	2.00		1.00		1.00	U	2.00	U	1.00	U	2.00	
	4-Methyl-2-Pentanone (MIBK)	23.0	530	50,000	μg/L μα/I	2.00	U	2.00	U	2.00		2.00		2.00	U	2.00	U	2.00	U	2.00	
	Methylene Chloride	1.0	70	50,000	μg/L μα/I	1.00	U	1.00	U	1.00		0.30		1.00	U	1.00	U	0.30	U	0.30	
	Nonhtholono	1 27	140	30,000	μg/L μα/I	2.00	U	2.00	U	2.00		1.00	U	1.00	U	2.00	U	1.00	U	2.00	
	n Propylhonzono	37	140 NS	20,000	μg/L μα/I	2.00	U	2.00	U	2.00		2.00	U	2.00	U	2.00	U	2.00	U	2.00	
	<i>h</i> -Propyidenzene	9	100	NS 6 000	µg/L	1.00	U	0.50	U	0.50	U	1.00	U	1.00	U	0.50	U	1.00	U	1.00	U
	Stylene	0.5	100	50,000	µg/L	0.50	U	0.50	U	0.50		0.30	U	0.30	U	0.50	U	0.50	U	0.50	
	1,1,1,2-Tetrachioroethane	0.3	200	30,000	µg/L	0.50	U	0.50	U	0.500	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	
	1,1,1-1 fictuoroethane	0.8	200	20,000	µg/L	0.50	U	0.50	U	0.500	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	1,1,2,2-Tetrachloroethane	2	2	50,000	µg/L	0.50	U	0.50	U	0.500	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
	1,1,2-1 fichlorobengene	2	J	50,000 NS	µg/L	0.30	U	0.30	U	0.300	U	0.30	U	0.30	U	0.30	U	0.30	U	0.50	U
	1,2,3-Trichloropropaga	4	INS NS	INS NS	µg/L	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	
	1,2,3-Trichloropropane	1	70	50,000	µg/L	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.00	
	1,2,4-Tricmorobenzene	2	/0 NS	50,000 NS	µg/L	0.50	U	0.30	U	0.50	U	0.30	U	0.50	U	0.50	U	0.50	U	0.50	
	1,2,4-1 Timethylbenzene	3 12	INS NS	INS NS	µg/L	0.50	U	0.30	U	0.50	U	0.30	U	0.50	U	0.50	U	0.50	U	0.50	
	Tatrachlaraethana	12	NS	20,000	µg/L	0.50	U	0.30	U	0.50	U	0.30	U	0.30	U	0.30	U	0.50	U	6.00	
	Tetrachioroethene	140	3	30,000	µg/L	0.50	U	/.10	U	0.50	U	14.8	U	4.90	II	0.62	U	0.50	U	0.00	TT
	Trichloroothono	20	1,000	5 000	μg/L μα/I	0.50	U	0.50	U	0.50		0.30	U	0.30	U	0.50	U	0.50	U	0.50	
	Themotoethene	40	5	5,000	µg/L	0.30	U	0.30	0	0.30	0	0.7		0.89	J	0.30	0	0.30	U	0.30	0
	Trichloroflycromethene (Freen 11)	7	NC	NC		1.00	T	1.00	T	1.00	11	1.00	TT	1.00	П	1.00	TT	1.00	T	1.00	1.1
	m n Vylono	7	10,000	5 000	µg/L	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	
	m,p -Aylene	9	10,000	5,000	µg/L	0.50	U	0.50	U	0.50		0.50	U	1.00	U	0.50	U	0.50	U	0.50	
	Vinyl Chloride	9	10,000	50,000	µg/L µg/I	0.50	U	0.50	U	0.50		0.50	U	0.30	U	0.50	U	0.30	U	0.50	
DECIDEC		0.5	0.2	50,000	μg/L u α/I	0.50	T	0.30	U I	0.011	U	0.50	U	0.30	U	0.50	U	0.50	U	0.010	
PESTICIDES	4,4 -DDD	0.48	0.2	30	µg/L	0.042	J	0.039	J	0.011	0	0.010	U	0.010	U	0.011	U	NA		0.010	
(SW8081D)	4,4 - DDE	0.1	0.05	400	µg/L	0.010	U	0.010	U	0.011	U	0.010	U	0.010	U	0.011	U	NA NA		0.010	U
	4,4 -DD1	0.30	0.5	1	µg/L	0.042	J	0.033	J	0.011		0.010	U	0.010	U	0.011	U	NA		0.010	
	Alurin	0.038	0.5 NS	20 NS	µg/L	0.010	U	0.010	U	0.011	U	0.010	U	0.010	U	0.011	U	NA		0.010	
	alpha Chlordona	0.042	2	2	μg/L μα/I	0.010	U	0.014	J	0.011		0.010	U	0.010	U	0.011	U	NA		0.010	
	hote BHC	0.058	Z NS	Z NS	µg/L	0.031	U	0.031	U	0.033	U	0.031	U	0.032	U	0.030	U	NA		0.031	
	delta BHC	0.038	NS	NS	µg/L	0.010	U	0.010	U	0.011	U	0.010	U	0.010	U	0.011	U	NA		0.010	U
	Dieldrin	0.31	0.1	0.5	μg/L μg/I	0.010	U	0.010	U	0.011	U	0.010	U	0.010	U	0.011	U	NA		0.010	U
	Endosulfan I	0.12	10	0.5	μg/L μg/I	0.010	U	0.010	U	0.011	U	0.010	U	0.010	U	0.011	U	NA		0.010	U
	Endosulfan II	0.038	NS	NS	µg/L	0.010	U	0.010	U	0.011	U	0.010	U	0.010	U	0.011	U	NA		0.010	U
	Endosulfan sulfata	0.12	NS	NS	µg/L	0.010	U	0.010	U	0.011	U	0.010	U	0.010	U	0.011	U	NA		0.010	U
	Endosunan sunate	0.12	2	5	µg/L	0.010	U	0.010	U	0.011	U	0.010	U	0.010	U	0.011	U	NA		0.010	U
	Endrin Endrin aldabyda	0.12	NS	NS	μg/L μg/I	0.010	U	0.010	U	0.011	U	0.010	U	0.010	U	0.011	U	NA		0.010	U
	Endrin ladenyde	0.12	INS NS	NS	μg/L μα/I	0.010	U	0.010	U	0.011		0.010	U	0.010	U	0.011	U	NA		0.010	
	gamma-BHC (Lindana)	17.0	0.2	110	µg/L	0.33	U	0.010	0	0.011		0.010	U	0.010	U	0.011	U	NA NA		0.010	U
	gamma-Chlordane	0.058	0.2		µg/L	0.051	Τī	0.051	I.	0.011	11	0.051	TT	0.003	I	0.011	U	NA NA		0.010	U
	gamma-Chiordane Hontochlor	0.038	<u> </u>		μg/L	0.031	U	0.031	U	0.033		0.051		0.032	U	0.030	U			0.031	U
	Heptachlor apovide	0.058	0.4	1	μg/L	0.010		0.010		0.011		0.010		0.010	U	0.011	U	INA NA		0.010	U
	Herechlorobenzenc	0.058	0.2	<u> </u>	µg/L	0.010	U	0.010		0.011		0.010		0.010	U	0.011	U	INA NA		0.010	U
	Hexachiorobenzene	0.059	1	0,000	μg/L	0.010	U	0.010		0.011		0.010		0.010	U	0.011	U	INA NA		0.010	U
	Nietnoxychlor Toyophono	0.058	40 NS	10 NC	μg/L	0.010	U	0.010		0.011		0.010		0.010	U	0.011	U	NA NA		0.010	U
	тохарпене	1.2	INS	112	µg/L	0.26	U	0.250	U	0.270	U	0.250	U	0.260	U	0.280	U	INA		0.200	U

Table 10Groundwater Analytical Results Fall 2014Former Sudbury Training Annex - Landfill at AOC A7

Method	Analyte	Historical Maximum	MCP GW-1 Groundwater Standard	MCP GW-3 Groundwater Standard	Units	OHM-A7-08	Q	A7-DUP01 Duplicate of OHM- A7-08	Q	SUD-A07-014	Q	SUD-A07-065	Q	OHM-A7-51	Q	SUDWP-A07-01	Q	A7-TRIP BLANK	Q	A7-RB	Q
TAL METALS	Aluminum	42,100	NS	NS	μg/L	100	U	100	U	210		100	U	100	U	100	U	NA		100	U
(SW6010C/	Antimony	5	6	8,000	μg/L	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	NA		2.0	U
SW6020A)	Arsenic	67	10	900	μg/L	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	NA		3.0	U
MERCURY	Barium	376	2,000	50,000	μg/L	25.0	U	25.0	U	25.0	U	25.0	U	25.0	U	39.7	J	NA		25	U
(SW7470A)	Beryllium	4	4	200	μg/L	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	NA		2.0	U
	Cadmium	10	5	4	μg/L	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	NA		2.0	U
	Calcium	40,600	NS	NS	μg/L	18,000		17,800		8,340		11,400		10,100		16,800		NA		2,500	U
	Chromium	112	100	300	μg/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	NA		5.0	U
	Cobalt	132	NS	NS	μg/L	25.0	U	25.0	U	25.0	U	25.0	U	25.0	U	25	U	NA		25	U
	Copper	86.2	NS	NS	μg/L	13.0	U	13.0	U	13.0	U	13.0	U	13.0	U	13	U	NA		13	U
	Iron	135,000	NS	NS	μg/L	1,700		1,700		359		50	U	50.0	U	10,900		NA		50	U
	Lead	485	15	10	μg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	NA		2.5	U
	Magnesium	19,300	NS	NS	μg/L	5,340		5,250		2,500	U	3,300	J	3,280	J	3,620	J	NA		2,500	U
	Manganese	25,100	NS	NS	μg/L	1,300		1,290		136		89.96		20.2		745		NA		7.5	U
	Mercury	3.1	2	20	μg/L	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	0.15	U	NA		0.15	U
	Nickel	80.4	100	200	μg/L	20.0	U	20.0	U	20.0	U	20.0	U	20.0	U	20.0	U	NA		20.0	U
	Potassium	16,400	NS	NS	μg/L	3,700	J	3,630	J	2,500	U	2,500	U	2,500	U	5,150		NA		2,500	U
	Selenium	100	50	100	μg/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	NA		5.0	U
	Silver	5	100	7	μg/L	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	NA		2.5	U
	Sodium	27,200	NS	NS	μg/L	7,760		7,610		29,000		7,720		6,260		30,700		NA		2,500	U
	Thallium	2	2	3,000	μg/L	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	NA		1.0	U
	Vanadium	97.2	30	4,000	μg/L	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	NA		5.0	U
	Zinc	126	5,000	900	μg/L	23.2		21.4		21.4		10.1	J	10.0	U	7,210		NA		10	U
CYANIDE (SM4500CN-CE)	Cyanide, Total	11	200	30	μg/L	0.0041	U	0.0041	U	0.0041	U	0.0041	U	0.0041	U	0.0041	U	NA		0.0041	U
COD (E410.4)	Chemical Oxygen Demand	190	NS	NS	mg/L	10	U	10.8	J	10	U	10	U	10	U	10.8	J	NA		NA	
	Temperature, initial		NS		° Celsius	11.44		NA		11.14		12.44	•	12.32		13.03		NA		NA	
	Temperature, final		NS		° Celsius	11.1		NA		11.16		12.8		12.39		12.91		NA		NA	
	pH		NS		Std units	5.58		NA		5.21		5.82		5.72		5.83		NA		NA	
	Specific Conductance	ļ	NS		μS/cm	120		NA		240		5.82		88		363		NA		NA	
	ORP/Eh2		NS		mV	117.3		NA		216.6		191.6		168.1		53.2		NA		NA	
FIELD	Dissolved Oxygen		NS		mg/L	0.4		NA		1.9		0.95		0.41		1.41		NA		NA	
PARAMETERS	Turbidity		NS		NTU	3.68		NA		105		1.65		3.9		1.26		NA		NA	

Notes:

0.333 Detected result above GW-1 Standard

2.0 U ND results above GW-1 Standard

ug/L - microgram per liter U - non-detect

J - Estimated result

NS - No standard

NA - Not analyzed

TABLE 11Groundwater Analytical Results Fall 2015Former Sudbury Training Annex - Landfill at AOC A7

Method	Analyte	Historical Maximum	MCP GW-1 Groundwater	MCP GW-3 Groundwater	Units	OHM-A7-08	Q	A7-DUP01 Duplicate of	Q	SUD-A07-014	Q	SUD-A07-065	Q	SUDWP-A07-01	Q	A7-TRIP BLANK	Q
			Standard	Standard		10/9/2015		OHM- A7-08 10/9/2015		10/9/2015	\square	10/9/2015		Dry - No sample		10/9/2015	
VOLATILES					<u> </u>						+		—		-		—
(SW8260C)	Acetone	25.0	6 300	50.000	ug/I	10	TT	10	II	10	ΤI	10	II	NC		10.0	II
(51102000)	Benzene	1	5	10,000	μg/L μg/I	0.50	U	0.50	U	0.50	U	0.50		NC	\vdash	0.50	U U
	Bromobenzene	0.5	NS	NS	μg/L μg/I	5.0	U	5.0	U	5.0	U	5.0		NC	\vdash	1.00	U
	Bromochloromethane	0.5	NS	NS	μg/L	5.0	U	5.0	U	5.0	U	5.0	U	NC	\vdash	0.50	U
	Bromodichloromethane	0.5	3	50,000	μ <u>σ/L</u> μσ/L	1.0	U	1.0	U	1.0	U	1.0	U	NC		0.50	U
	Bromoform	0.5	4	50,000	μ <u>σ/L</u> μσ/L	1.0	U	1.0	U	1.0	U	1.0	U	NC		0.50	U
	Bromomethane	0.5	10	800	<u>µg/L</u> µg/L	2.0	U	2.0	U	2.0	U	2.0	U	NC		1.00	U
	2-Butanone	25	4.000	50.000	ug/L	10	Ū	10	Ū	10	Ū	10	Ū	NC		5.00	U
	n -Butylbenzene	4	NS	NS	ug/L	5.0	Ū	5.0	Ū	5.0	U	5.0	U	NC		2.00	U
	sec -Butylbenzene	3	NS	NS	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	NC		1.00	Ū
	<i>tert</i> -Butylbenzene	0.5	NS	NS	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	NC		1.00	Ū
	Carbon Disulfide	1.0	NS	NS	ug/L	5.0	U	5.0	U	5.0	U	5.0	U	NC		1.00	U
	Carbon Tetrachloride	0.5	5	5,000	ug/L	1.0	U	1.0	U	1.0	U	1.0	U	NC		0.50	U
	Chlorobenzene	64	100	1,000	ug/L	1.1		1.1		1.0	U	1.7		NC		0.50	U
	Chloroethane	0.5	NS	NS	ug/L	2.0	U	2.0	U	2.0	U	2.0	U	NC		0.50	Ū
	Chloroform	300	70	20,000	μg/L	1.0	U	1.0	U	1.0	U	0.72	J	NC		0.50	U
	Chloromethane	0.5	NS	NS	μg/L	2.0	U	2.0	U	2.0	U	2.0	U	NC		1.00	U
	2-Chlorotoluene	0.5	NS	NS	μg/L	5.0	U	5.0	U	5.0	U	5.0	U	NC		1.00	U
	4-Chlorotoluene	1.0	NS	NS	μg/L	5.0	U	5.0	U	5.0	U	5.0	U	NC		1.00	U
	cis-1,2-Dichloroethene	19	70	50,000	μg/L	3.1		3.1		1.0	U	3.8		NC		0.50	U
	cis-1,3-Dichloropropene	0.5	NS	NS	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	NC	Ţ	0.50	U
	Dibromochloromethane	0.5	2	50,000	μg/L	1.0	U	1.0	U	1.0	U	1.0	U	NC	l l	0.50	U
	Dibromomethane	0.5	NS	NS	μg/L	5.0	U	5.0	U	5.0	U	5.0	U	NC		0.50	U
	Dichlorodifluoromethane (Freon															[
	12)	0.8	NS	NS	μg/L	2.0	U	2.0	U	2.0	U	2.0	U	NC	$\mid = \mid$	1.00	U
	1,2-Dibromo-3-chloropropane	4	NS	NS	μg/L	5.0	U	5.0	U	5.0	U	5.0	U	NC		1.00	U
	1,2-Dibromoethane (EDB)	1.0	0.02	50,000	μg/L	1.0	U	1.0	U	1.0	U	1.0	U	NC		0.50	U
	1,2-Dichlorobenzene	0.5	600	2,000	μg/L	1.0	U	1.0	U	1.0	U	1.0	U	NC		0.50	U
	1,3-Dichlorobenzene	0.5	40	50,000	μg/L	1.0	U	1.0	U	1.0	U	1.0	U	NC		0.50	U
	1,4-Dichlorobenzene	0.5	5	8,000	μg/L	1.0	U	1.0	U	1.0	U	1.0	U	NC		0.50	U
	1,1-Dichloroethane	0.5	70	20,000	μg/L	1.0	U	1.0	U	1.0	U	1.0	U	NC		0.50	U
	1,2-Dichloroethane	6.7	5	20,000	μg/L	1.0	U	1.0	U	1.0	U	1.0	U	NC		0.50	U
	1,1-Dichloroethene	0.5	7	30,000	μg/L	1.0	U	1.0	U	1.0	U	1.0	U	NC		0.50	U
	1,2-Dichloropropane	0.5	5	50,000	μg/L	2.0	U	2.0	U	2.0	U	2.0	U	NC		0.50	U
	1,3-Dichloropropane	0.5	NS	NS	μg/L	5.0	U	5.0	U	5.0	U	5.0	U	NC		2.00	U
	2,2-Dichloropropane	0.5	NS	NS	μg/L	5.0	U	5.0	U	5.0	U	5.0	U	NC		5.00	U
	trans -1,2-Dichloroethene	6	100	50,000	μg/L	1.0	U	1.0	U	1.0	U	0.55	J	NC		0.50	U
	trans -1,3-Dichloropropene	0.5	0.4	200	μg/L	0.50	U	0.50	U	0.50	U	0.50	U	NC		0.50	U

TABLE 11Groundwater Analytical Results Fall 2015Former Sudbury Training Annex - Landfill at AOC A7

			MCP GW-1	MCP GW-3				A7-DUP01									
Method	Analyte	Historical	Groundwater	Groundwater	Units	OHM-A7-08	0	Duplicate of	0	SUD-A07-014	0	SUD-A07-065	0	SUDWP-A07-01	0	A7-TRIP	0
	· · ·	Maximum	Standard	Standard			•	OHM- A7-08							· ·	BLANK	
	1,1-Dichloropropene	0.5	NS	NS	μg/L	5.0	U	5.0	U	5.0	U	5.0	U	NC		1.00	U
	Ethylbenzene	7	700	5,000	μg/L	1.0	U	1.0	U	1.0	U	1.0	U	NC		0.50	U
	Hexachlorobutadiene	0.5	0.6	3,000	μg/L	5.0	U	5.0	U	5.0	U	5.0	U	NC		2.00	U
	Isopropylbenzene	5	NS	NS	μg/L	5.0	U	5.0	U	5.0	U	5.0	U	NC		1.00	U
	2-Hexanone	10	NS	NS	μg/L	10	U	10	U	10	U	10	U	NC		5.00	U
	4-Isopropyltoluene	0.5	NS	NS	μg/L	5.0	U	5.0	U	5.0	U	5.0	U	NC		1.00	U
	4-Methyl-2-Pentanone (MIBK)				μg/L											2.00	U
		25.0	350	50,000		5.0	U	5.0	U	5.0	U	5.0	U	NC			
	Methyl tert-butyl ether	1.0	70	50,000	μg/L	1.0	U	1.0	U	1.0	U	1.0	U	NC		0.50	U
	Methylene Chloride	1	5	50,000	μg/L	2.0	U	2.0	U	2.0	U	2.0	U	NC		1.00	U
	Naphthalene	37	140	20,000	μg/L	5.0	U	5.0	U	5.0	U	5.0	U	NC		2.00	U
	<i>n</i> -Propylbenzene	9	NS	NS	μg/L	5.0	U	5.0	U	5.0	U	5.0	U	NC		1.00	U
	Styrene	0.5	100	6,000	μg/L	5.0	U	5.0	U	5.0	U	5.0	U	NC		0.50	U
	1,1,1,2-Tetrachloroethane	0.5	5	50,000	μg/L	1.0	U	1.0	U	1.0	U	1.0	U	NC		0.50	U
	1,1,2,2-Tetrachloroethane	31	2	50,000	μg/L	0.50	U	0.50	U	0.50	U	1.8		NC		0.50	U
	Tetrachloroethene	140	5	30,000	μg/L	4.2		4.7		1.0	U	12.5		NC		0.50	U
	Toluene	26	1,000	40,000	μg/L	1.0	U	1.0	U	1.0	U	1.0	U	NC		0.50	U
	1,2,3-Trichlorobenzene	4	NS	NS	μg/L	5.0	U	5.0	U	5.0	U	5.0	U	NC		2.00	U
	1,2,4-Trichlorobenzene	2	70	50,000	μg/L	5.0	U	5.0	U	5.0	U	5.0	U	NC		0.50	U
	1,1,1-Trichloroethane	0.8	200	20,000	μg/L	1.0	U	1.0	U	1.0	U	1.0	U	NC		0.50	U
	1,1,2-Trichloroethane	2	5	50,000	μg/L	1.0	U	1.0	U	1.0	U	1.0	U	NC		0.50	U
	Trichloroethene	40	5	5,000	μg/L	1.0	U	1.0	U	1.0	U	6.9		NC		0.50	U
	Trichlorofluoromethane (Freon	_			μg/L											1.00	U
	11) 1.2.2 T : 11	1	NS	NS	7	1.0	U	1.0	U	1.0	U	1.0	U	NC		2.00	
	1,2,3-Trichloropropane	1	NS	NS	µg/L	5.0	U	5.0	U	5.0	U	5.0	U	NC		2.00	U
	1,2,4-Trimethylbenzene	3	NS	NS	µg/L	5.0	U	5.0	U	5.0	U	5.0	U	NC		0.50	U
	1,3,5-1rimethylbenzene	12	NS	NS	µg/L	5.0	U	5.0	U	5.0	U	5.0	U	NC		0.50	U
	<i>m,p</i> -Xylene	9	10,000	5,000	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	NC		1.00	U
	0 -Aylene	9	10,000	50,000	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	NC NC		0.50	U
DESTICIDES	V IIIyi Cillolide	0.5	2	50,000	µg/L	1.0	U	1.0	U	1.0	U	1.0	U	ne		0.30	U
resticides	4 4' 000	0.48	0.2	50	на/Г	0.027	т	0.020	т	0.051	TT	0.050	T	NC		NΛ	
(3 W 0001D)	4,4 -DDD 4 4' DDE	0.48	0.2	400	µg/L	0.037	J	0.029	J	0.051	U	0.050	U	NC		NA NA	
	4,4 -DDE 4 4' DDT	0.1	0.03	400	µg/L	0.050	I	0.031	I	0.051	U	0.050	U	NC		NA NA	
	4,4-DD1	0.50	0.5	20	µg/L	0.050	J	0.051	J	0.051	U	0.050	U	NC		NA NA	
	alpha-BHC	0.038	NS	NS	μg/L μg/I	0.050	U	0.051	U	0.051	U	0.050	U	NC		NA	
	heta-BHC	0.042	NS	NS	μg/L μg/I	0.050	U	0.051	U	0.051	U	0.050	U	NC		NΔ	
	delta-BHC	0.030	NS	NS	μ <u>σ</u> /L	0.050	U	0.051	U	0.051	U	0.050	U	NC		NA	-
	Dieldrin	0.12	0.1	0.5	<u>µg/L</u> цо/L	0.050	U	0.051	U	0.051	U	0.050	U	NC		NA	
	Endosulfan I	0.058	10	2	<u>µg/L</u> цу/L	0.050	U	0.051	U	0.051	U	0.050	U	NC		NA	
	Endosulfan II	0.12	NS	NS	ug/L	0.050	U	0.051	U	0.051	U	0.050	U	NC		NA	
	Endosulfan sulfate	0.12	NS	NS	ug/L	0.050	U	0.051	U	0.051	U	0.050	U	NC		NA	
	Endrin	0.12	2	5	µg/L	0.050	Ū	0.051	Ū	0.051	Ū	0.050	Ū	NC		NA	
	Endrin aldehvde	0.12	NS	NS	μg/L	0.050	Ū	0.051	Ū	0.051	Ū	0.050	Ū	NC		NA	
	gamma-BHC (Lindane)	17.0	0.2	4	μg/L	0.18		0.15	Ť	0.051	U	0.17	Ē	NC		NA	
	Heptachlor	0.058	0.4	1	μg/L	0.050	U	0.051	U	0.051	U	0.050	U	NC		NA	
	Heptachlor epoxide	0.058	0.2	2	μg/L	0.050	U	0.051	U	0.051	U	0.050	U	NC		NA	
	Methoxychlor	0.058	40	10	μg/L	0.050	U	0.051	U	0.051	U	0.050	U	NC		NA	
	Toxaphene	1.2	NS	NS	μg/L	2.5	U	2.5	U	2.5	U	2.5	U	NC		NA	
	Chlordane	0.058	2	2	μg/L	0.50	U	0.51	U	0.51	U	0.50	U	NC		NA	

TABLE 11Groundwater Analytical Results Fall 2015Former Sudbury Training Annex - Landfill at AOC A7

			MCP GW-1	MCP GW-3				A7-DUP01									
Method	Analyte	Historical	Groundwater	Groundwater	Units	OHM-A7-08	Q	Duplicate of	Q	SUD-A07-014	Q	SUD-A07-065	Q	SUDWP-A07-01	Q	A7-TRIP	Q
		Maximum	Standard	Standard			_	OHM- A7-08					_			BLANK	
TAL METALS	Aluminum	42,100	NS	NS	μg/L	200	U	106	J	1,000		173	J	NC		NA	
(SW6010C/SW6020	Antimony	5	6	8,000	μg/L	4.0	U	4.0	U	4.0	U	4.0	U	NC		NA	
A) MERCURY	Arsenic	67	10	900	μg/L	4.0	U	4.0	U	4.0	U	4.0	U	NC		NA	
(SW7470A)	Barium	376	2,000	50,000	μg/L	50	U	50	U	50	U	50	U	NC		NA	
	Beryllium	4	4	200	μg/L	4.0	U	4.0	U	4.0	U	4.0	U	NC		NA	
	Cadmium	10	5	4	μg/L	4.0	U	4.0	U	4.0	U	4.0	U	NC		NA	
	Calcium	40,600	NS	NS	μg/L	11,800		19,100		7,050		13,000		NC		NA	
	Chromium	112	100	300	μg/L	10	U	10	U	10	U	10	U	NC		NA	
	Cobalt	132	NS	NS	μg/L	25.4	J	25.3	J	50	U	50	U	NC		NA	
	Copper	86.2	NS	NS	μg/L	25	U	25	U	25	U	25	U	NC		NA	
	Iron	135,000	NS	NS	μg/L	5,890		5,580		2,370		323		NC		NA	
	Lead	485	15	10	μg/L	6.3		5.5		5.0	U	5.0	U	NC		NA	
	Magnesium	19,300	NS	NS	μg/L	5,680		5,620		5,000	U	3,360	J	NC		NA	
	Manganese	25,100	NS	NS	μg/L	1,420		1,410		371		215		NC		NA	
	Mercury	3.1	2	20	μg/L	0.20	U	0.20	U	0.20	U	0.20	U	NC		NA	
	Nickel	80.4	100	200	μg/L	40	U	40	U	40	U	40	U	NC		NA	
	Potassium	16,400	NS	NS	μg/L	3,460	J	3,450	J	5,000	U	2,710	J	NC		NA	
	Selenium	100	50	100	μg/L	10	U	10	U	10	U	10	U	NC		NA	
	Silver	5	100	7	μg/L	5.0	U	5.0	U	5.0	U	5.0	U	NC		NA	
	Sodium	27,200	NS	NS	μg/L	7,830		7,870		26,300		7,580		NC		NA	
	Thallium	2	2	3,000	μg/L	2.0	U	2.0	U	2.0	U	2.0	U	NC		NA	
	Vanadium	97.2	30	4,000	μg/L	10	U	10	U	10	U	10	U	NC		NA	
	Zinc	126	5,000	900	μg/L	23.9		27.6		17.0	J	11.6	J	NC		NA	
CYANIDE																	
(SW9012)	Cyanide, Total	11	200	30	μg/L	0.010	U	0.010	U	0.010	U	0.010	U	NC		NA	
COD (SM21 5220C)	Chemical Oxygen Demand (COD)	190	NS	NS	mg/L	20	U	20	U	20	U	20	U	NC		NA	
FIELD PARAMETERS	Temperature, initial		NS		° Celsius	11.77		NA		13.67		14.36		NC		NA	
	Temperature, final		NS		° Celsius	12.61		NA		13.67		14.72		NC		NA	
	рН		NS		Std units	5.80		NA		7.2		6.30		NC		NA	
	Specific Conductance		NS		µS/cm	0.198		NA		0.241		0.142		NC		NA	
	ORP/Eh		NS		mV	102.9		NA		-17.8		98.7		NC		NA	
	Dissolved Oxygen		NS		mg/L	0.27		NA		4.64		1.03		NC		NA	
	Turbidity		NS		NTU	83.5		NA		84.7		24.00		NC		NA	

Notes:

0.333 Detected result above GW-1 Standard

2.0 U Non-detect results above GW-1 Standard

ug/L - microgram per

liter

U - non-detect

J - Estimated result

NS - No standard

NA - Not analyzed

NC - Not collected due to insufficient water in well

Table 12 Landfill Gas Monitoring Former Sudbury Training Annex A7-1

Parameter	Ranges from April 1998 to May 2006	Nov 14, 2006	June 26, 2007	Oct 23, 2007	Jun 23, 2008	Jun 10, 2009	Nov 3, 2010	Nov 2, 2011	Dec 4, 2012	Nov 21, 2013	Nov 18, 2014	Nov 18, 2015
Volatile Organic Compound (ppm)	0-3.3 (June 2005)	0	0	0	0	0	0	0	0	NS	NS	NS
Oxygen (%)	18.18 (April 2002) - 20.9 (Oct 1999)	12.4	20.4	19.5	21.9	20.9	16.7	20.6	19.5	NS	NS	NS
Lower Explosive Limit (%)	All readings $= 0$	0	0	0	0	0	0	0	0	NS	NS	NS
Carbon Dioxide (%)	0-0.7 (April 2002 and May 2006)	6.4	6.4	0.6	0	0	3.0	1.1	2.1	NS	NS	NS
Methane (%)	All readings $= 0$	0	0	0	0	0	0	0	0	NS	NS	NS
Atmospheric Pressure (Inches Hg)	29.35 (April 2000) - 30.2 (Oct 1998 and June 2005)	29.4	30.1	29.9	29.66	29.8	30.2	30.07	29.9	30.16	29.47	30.43

Notes:

NR - No reading NS - Not sampled due to hornets nest

> Table 12 Landfill Gas Monitoring Former Sudbury Training Annex A7-1 Page 1 of 1

Table 13 Landfill Gas Monitoring Former Sudbury Training Annex A7-2

Parameter	Ranges from April 1998 to May 2006	Nov 14, 2006	June 26, 2007	Oct 23, 2007	Jun 23, 2008	Jun 10, 2009	Nov 3, 2010	Nov 2, 2011	Dec 4, 2012	Nov 21, 2013	Nov 18, 2014	Nov 18, 2015
Volatile Organic Compound (ppm)	0-7.6 (June 2005)	0	0	0	0	0	0	0	0	NS	NS	0.5
Oxygen (%)	19.0 (May 2006) - 21.2 (Oct 2002)	9.2	NR	16.0	21.6	20.9	12.7	19.0	19.0	NS	NS	17.2
Lower Explosive Limit (%)	All readings $= 0$	0	0	0	0	0	0	0	0	NS	NS	0.002
Carbon Dioxide (%)	0-1.3 (May 2006)	8.1	NR	3.0	0.1	0	4.6	1.9	2.4	NS	NS	2.0
Methane (%)	All readings $= 0$	0	0	0	0	0	0	0	0	NS	NS	0.1
Atmospheric Pressure (Inches Hg)	29.35 (April 2000) - 30.2 (Oct 1998 and June 2005)	29.4	30.1	29.9	29.66	29.8	30.2	30.07	29.9	30.16	29.47	30.43

Notes:

NR - No reading NS - Not sampled due to hornets nest

Table 14 Landfill Gas Monitoring Former Sudbury Training Annex A7-3

Parameter	Ranges from April 1998 to May 2006	Nov 14, 2006	June 26, 2007	Oct 23, 2007	Jun 23, 2008	Jun 10, 2009	Nov 3, 2010	Nov 2, 2011	Dec 4, 2012	Nov 21, 2013	Nov 18, 2014	Nov 18, 2015
Volatile Organic Compound (ppm)	0-2.5 (June 2005)	0	0	0	0	0.3	0	0	0	0	0	1.0
Oxygen (%)	19.7 (Oct 2001 and Apr 2002) - 20.9 (Apr 1998, May 2001 and April 2004)	9.9	20.6	18.5	21.9	20.8	13.6	18.9	18.0	18.8	18.8	17.5
Lower Explosive Limit (%)	All readings $= 0$	0	0	0	0	0	0	0	0	0	0	0.002
Carbon Dioxide (%)	0-0.4 (April 2004)	7.9	7.9	1.4	0	0	5.1	3.0	4.0	2.1	2.1	2.9
Methane (%)	All readings $= 0$	0	0	0	0	0	0	0	0	0	0	0.1
Atmospheric Pressure (Inches Hg)	29.35 (April 2000) - 30.2 (Oct 1998 and June 2005)	29.4	30.1	29.9	29.66	29.8	30.2	30.07	29.9	30.16	29.47	30.43

Notes:

NR - No reading

NS - Not sampled due to hornets nest

Table 14 Landfill Gas Monitoring Former Sudbury Training Annex A7-3 Page 1 of 1

Table 15Landfill Gas MonitoringFormer Sudbury Training AnnexA7-4

Parameter	Ranges from April 1998 to May 2006	Nov 14, 2006	June 26, 2007	Oct 23, 2007	Jun 23, 2008	Jun 10, 2009	Nov 3, 2010	Nov 2, 2011	Dec 4, 2012	Nov 21, 2013	Nov 18, 2014	Nov 18, 2015
Volatile Organic Compound (ppm)	0-1.9 (June and Sept 2005)	0	0	0	0	0.1	0	0	0	NS	0	0.5
Oxygen (%)	19.2 (April 2002) - 20.9 (Oct 1999 and Apr 2003)	12.9	20.4	20.1	22.0	20.9	15.9	20.4	17.7	NS	20.0	19.6
Lower Explosive Limit (%)	All readings $= 0$	0	0	0	0	0	0	0	0	NS	0	0.002
Carbon Dioxide (%)	0-0.2 (April 2002)	6.5	6.5	0.4	0	0	3.7	1.7	3.2	NS	0	1.4
Methane (%)	All readings $= 0$	0	0	0	0	0	0	0	0	NS	0	0.1
Atmospheric Pressure (Inches Hg)	29.35 (April 2000) - 30.2 (Oct 1998 and June 2005)	29.4	30.1	29.9	29.66	29.8	30.2	30.07	29.9	30.16	29.47	30.43

Notes:

NR - No reading

NS - Not sampled due to hornets nest

Table 15 Landfill Gas Monitoring Former Sudbury Training Annex A7-4 Page 1 of 1



KGS - 2015 Annual Report—Former SudburyTraining Annex






File: 2015AR_SudburyAnnex.dwg

Figure 3 Sudbury Annex Area Map





J (UGpxkt qpo gpvcn—2018 Hkxg'[gct 'Tgxkgy 'Report '''''''''Former Sudbury Training Annex

Figure 4 Site Layout Area of Contamination A7

	Legend
•	LTM Sample Well
0	LTM Well–Gauge Only
θ	Damaged LTM Sample Well
	Staff Gauge
\oplus	Abandoned Monitoring Well
+	Gas Vent
)HM-A7-08	Well/Gauge/Vent Identification
-220-	Topographic Contour (ft amsl) (contour interval=4 ft)
×	Fence
	AOC A7 Boundary
	Stump Pile Area
	Toe Drain
Notes: AOC=Area LTM=Long	of Contamination Term Monitoring

Five Year Review Report Former Fort Devens Sudbury Annex

H & S Environmental , Inc. 160 East Main Street, Suite 2F, Westborough, MA 01581

Tglgtgpegu<'JIN.'WUCEG.'y y y (b cuuli qx.'Ctel KU'Qprkpg'Ko ci gt (2/10/2014 CNL Source<

50urcei w/utx/23'y i ni k/Wsf dwt {^aO UKY ^CTaCppwcnu4235^3/24+Nc {qwlb zf "









Figure 5 Interpretive Water Table Elevation Sudbury Annex - AOC A7 October 9, 2015

Legend				
٢	LTM Sa	mple Well		
٢	LTM We	ell - Gauge O	nly	
	Staff Ga	auge		
\oplus	Monitor	ing Well - Da	maged	
\oplus	Monitor	ing Well - Ab	andoned	
÷	Gas Ve	nt		
OHM-A7-08	Well/Ga	uge/Vent Ide	ntification	
←	Ground	water Flow D)irection	
\sim	Ground (Interva	water Contou I = 2 FT)	ur (ft AMSL	_)
(198.95)	Ground	water Elevati	on (ft AMS	iL)
× —	Fence			
	Stump I	^{>} ile Area		
	Toe Dra	iin		
	Area of	Contaminatio	on (AOC)	
lotes: .TM = long term I IC = Not Collect DHM-A7-11 was IO-A07-M62 dam IO-A07-M61 cou	monitoring ed not used in ca naged Id not be loca	alculating contours		
leferences: IGL. LTMMP 2012.				
erial Sources: 2011, Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, etmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community				
		Five Year Re AOC A7	port 7	
Former F	Former Fort Devens Army Installation and Sudbury Annex Devens, Massachusetts			Budbury Annex
160 Ea	KOMA ast Main S	N Government Street, Suite 2F	Solutions, I Westborou	LLC ugh, MA 01581
0 60	120	Date: 08/08/2016	Figure 5	KGS

Feet



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B.1 Newspaper Notices

ow' to be shown

er the death of l. While there, nd takes a job an old church. o clairvoyant orm the couple daughter is contact them them of danger, ries begin to

n is renowned ly its editing its use of recurfs and themes.

Though it falls into the category of a thriller, the movie is more widely remembered for its focus on the psychology of grief. The film also caused controversy with its initial release, due to a rather racy scene for its time.

Fans of Film shows are every second Tuesday and Wednesday of the month at 7:30 p.m. Tickets are \$7 at the door.



Fans of Film at Fine Arts Theatre, Maynard will present "Don't Look Now," directed by Nicolas Roeg, at 7:30 p.m. Feb. 9 and 10. COURTESY PHOTO

Legal Notices

65 Main Street, Maynard Legal Notice

Notice is hereby given, in accordance with Massachusetts General Laws Chapter 138, as amended, that a Public Hearing will be held on Tuesday, February 16, 2016 at 7:10 p.m. in the Michael J. Gianotis Meeting Room (No. 201) at the Maynard Town Ruilding on the emblection of a New Room (No. 201) at the Maynard Town Building on the application for a New License on premise for All Alcohol as a Common Victualler license for Nargas Inc. d/b/a Roasted Peppers 65 Main Street, Maynard, MA. Copy of applica-tion is on file in the Office of the Selectmen.

> Selectman David Gavir Selectman Jason Krei Selectman Tim Egan Selectman Terrence Donovan Chairman Chris DiSilva

AD#13386162 Beacon Villager 2/4/16

25 Howard Road, Maynard LEGAL NOTICE NOTICE OF MORTGAGEE'S SALE OF REAL ESTATE

By virtue and in execution of the Power of Sale contained in a certain mort-gage given by Scott J. Thompson and Jennifer Regan Jones to Wells Fargo Home Mortgage, Inc., dated June 30, 2003 and recorded with the Middlesex County (Southern District) Registry of Deeds at Book 39909, Page 506, of which mortgage the undersigned is the present holder by assignment from Wells Fargo Bank, N.A. to Wilmington Savings Fund Society, FSB, doing business as Christiana Trust, not in its individual capacity, but solely as business as Christiana Trust, not in its individual capacity, but solely as trustee for BCAT 2015-13ATT dated August 7, 2015 and recorded with said registry on October 8, 2015 at Book 66202 Page 390, for breach of the conditions of said mortgage and for the purpose of foreclosing, the same will be sold at Public Auction at 3:00 p.m. on March 3, 2016, on the mortgaged premises located at 25 Howard Road, Maynard, Middlesex County, Massachusetts, all and singular the premises described in said mortgage,

TO WIT:

A certain parcel of land with the build-ings thereon situated on the Southwesterly side of Howard Road, Maynard, Middlesex County, Mass., being shown as Lot 30 on a plan enti-tiled Middlesex Overlook Subdivision Plan of Land in Maynard, Mass., Owned by Aima M. Wilson, surveyed by F.J. Healy Associates, Inc., Waltham, Mass., September 30, 1970, and recorded with Middlesex South District Deeds, book 12031, Page 326, to which plan reference is made for a more particular description of said Lot 30.

Being said Lot 30 as shown on said plan however otherwise bounded, measured or described.

For mortgagor's(s') title see deed recorded with Middlesex County (Southern District) Registry of Deeds in Book 34406, Page 287.

These premises will be sold and con-veyed subject to and with the benefit of all rights, rights of way, restrictions, easements, covenants, liens or claims in the nature of liens, improvements, public assessments any and all unpaid taxes, tax titles, tax liens, water and sewer liens and any other munici-pal assessments or liens or existing encumbrances of record which are in force and are applicable, having priori-ty over said mortgage, whether or not reference to such restrictions, ease-ments, improvements, liens or encum-brances is made in the deed. These premises will be sold and con-

TERMS OF SALE:

FIVE-YEAR REVIEW LEGAL NOTICE PUBLIC NOTICE FOR FIVE-YEAR REVIEW FORMER FORT DEVENS SUPERFUND SITE - SUDBURY ANNEX DEVENS, MASSACHUSETTS

The U.S. Army Corps of Engineers (USACE) is announcing the start of the fourth Five-Year Review of the remedifourth Five-Year Review of the remedi-al actions taken at the former Fort Devens Sudbury Training Annex Superlund Site, located in the towns of Hudson, Stow, Maynard, and Sudbury, MA. The purpose of a Five-Year Review is to evaluate whether the cleanup methods put in place at the site are working as designed and con-tinue to remain protective of human nealth and the environment as required by the Superfund law. It is anticipated that this Five-Year Review will be completed in September 2016. The USACE invites the local communi-ty to take part in the review process by ty to take part in the review process by participating in a community interview by submitting comments directly to the Department of the Army.

Department of the Army. BACKGROUND: Camp Devens was established in 1917 as a temporary training area for soldiers during World War I. In 1932, the site was named Fort Devens and made a permanent installation with the primary mission of commanding, training, and providing logistical support for non-divisional troop units. The land in the former Fort Devens Sudbury Training Annex was purchased by the U.S. Army in 1942 and was used as a training location for troops and a storage area for ammuni-tions. The Annex remained active until its placement on the Base Realignment and Closure (BRAC) list in 1995. Pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Sudbury Annex was placed on the National Priorities List (NPL) in 1990 because of environ-mental contamination associated with historic underground storage tanks, ammunition demolition areas fire trainhistoric underground storage tanks, ammunition demolition areas, fire training areas, and disposal of various lab-oratory waste. Since its placement on the NPL, long term monitoring and remediation activities have taken place the NPL, long term monitoring and remediation activities have taken place at the contaminated sites, which have proven to be successful. The Annex was deleted from the NPL in 2002. Currently, remaining activities include ongoing operation and maintenance (O&M) of the landfill cap, annual groundwater monitoring at Area of Concern 7, and evaluation of land use controls. In 2005, ownership of most of the site property transferred to the U.S. Fish and Wildlife Service as the Assabet River National Wildlife Refuge. As required under regulations, a review must be conducted every five years to ensure human health and the environment is protected. More detailed information on this site can be found on the U.S. Environmental Protection Agency (EPA) web page at: http://cumulis.epa.gov/superopa/cur-sites/csitinfo.cfm?ld=0100685&msspp= med

To submit comments and questions regarding the Five-Year Review process or site clean-up, please con-

Department of the Army

Base Realignment and Closure

U.S. Army Garrison Fort Devens

30 Quebec Street, Unit 100

Devens, MA 01434-4479

Office: 978-796-2205

Email: Robert j simeone civ@mail.mil

ls. G predicts more winter

of her crate. But excitement, or the rrots, lettuce and that Pinney put in sure that enticed make her public ce.

minutes, Pinney d that Ms. G. saw w. Ms. G appeared even standing nd legs to get a at her fans, like -son team of Matt ulmer, who drove from Springfield the festivities.

roundhog evanlatt Bulmer said, black top hat, the e famous by the rshals at Punx-7 Phil's annual ceremony.

ts make it offied Dan Bulmer, a matching top having one is like hout his staff."

as the second ediction for Ms. year's was bigger , because a snowed Drumlin Farm imiting Ms. G to en outside for a to and prediction. t see her shadow ecording to Mimi marketing assis-



Ms. G walks around her enclosure casting a shadow on Groundhog Day at Drumlin Farm, Feb. 2, 2016. Because of that, she predicted six more weeks of winter. She is the Official State Groundhog of the Commonwealth of Massachusetts. WICKED LOCAL STAFF PHOTO/ANN RINGWOOD

As for the title of the official groundhog of Massachusetts, Sanctuary **Director Renata Pomponi** said Gov. Deval Patrick signed a bill making that designation on July 31, 2014, and it was renewed by Gov. Charlie Baker.

Alexandra Pauli of Wellesley was one of the children who handed out Ms. G buttons.

'It's very important that Ms. G is the local ground-hog," Pauli said, "because she is a great weather forecaster and she's really cute."

Ellen Bartos and her two children, Isabella, 2, and

20 minutes from their home in Attleboro to witness Ms. G's forecast.

Wearing homemade groundhog masks, the trio summed up the mood of the morning.

"We're excited to see the groundhog," Ellen Bartos said. "We hope the mild weather keeps up."

Follow Henry Schwan on Twitter @henrycojo.

Only Online:

For a photo gallery and video of the groundhog emerging, visit maynard.wickedlocal.

Sweet Adelines chorus

דיוישואל הומשרבה ויפית אאברעוא

HUDSON SUN



non Hernandez. ger of the Westo-founder and oundation; and nager of Avidia



eadquartered in , with branches on, Westborough, Leominster, Marlh, Northborough ewsbury. nore information, liabank.com/about/ haritable-foundaweriseabove.org.



MARLBOROUGH Commercial

vacancy rates down

Decrease happens for fourth straight year

By Jeff Malachowski **Daily News Staff**

MARLBOROUGH -With more than a dozen companies moving to or expanding in the city in 2015, Marlborough's commercial vacancy rate fell for the fourth consecutive year.

Last year, Oyo Sports, New England Cryogenic Center Inc., LFB Corp., Mitutoyo and Tetra Tech were among the companies that moved to the city, trimming Marlborough's overall commercial vacancy rate from 14 percent in 2014 to 12 percent in 2015. In 2012, the vacancy rate was 22 percent, according to the Marlborough Economic Development Corporation's recently released 2015 report.

While the city's office vacancy rate remained at 18 percent, it had declined the previous three years. Four years ago, 34 percent of the city's offices were dormant, according to the report.

Due to the influx of corporations moving to Marlborough the past four

business community and employment market have grown exponentially."

Along with attracting large corporations, the MEDC has also recently taken steps to help the small business community thrive. Last week, the agency launched a revolving loan fund, which provides gap financing for prospective business owners to launch new companies and existing entrepreneurs seeking to expand and create jobs.

Looking ahead to 2016, Marlborough Economic Development Corporation officials prioritized filling empty commercial and industrial space by promoting the city's new downtown village district and its proximity to the Interstate 495 corridor, supporting small business growth and making transportation more accessible. Mayor Arthur Vigeant also eyed having more

Marlborough residents work at companies within the city. "It's been difficult to tie

Marlborough people to Marlborough jobs," he said.

The mayor is proud of the strides the city has made to fill vacant commercial space and is hopeful the h --- ill continue in

Legal Notices

FIVE-YEAR REVIEW LEGAL NOTICE PUBLIC NOTICE FOR FIVE-YEAR REVIEW FORMER FORT DEVENS SUPERFUND SITE - SUDBURY ANNEX DEVENS, MASSACHUSETTS

DEVENS, MASSACHUSETTS The U.S. Army Corps of Engineers (USACE) is announcing the start of the fourth Five-Year Review of the remedial actions taken at the former Fort Devens Sudbury Training Annex Superfund Site, located in the towns of Hudson, Stow, Maynard, and Sudbury, MA. The purpose of a Five-Year Review is to avaluate whether the cleanup methods put in place at the site are working as designed and continue to remain protective of human health and the environment as required by the Superfund law. It is anticipated that this Five-Year Review will be completed in September 2016. The USACE invites the local community to take part in the review by bubmiting comments directly to the Department of the Army.

News by submitting comments directly to the Department of the Army. BACKGROUND: Camp Devens was estab-lished in 1917 as a temporary training area for soldiers during World War I, In 1932, the sile was named Fort Devens and made a permanent installation with the primary mis-sion of commanding, training, and providing logistical support for non-divisional troop units. The land in the former Fort Devens Sudbury Training Annex was purchased by the U.S. Army in 1942 and was used as a training location for troops and a storage area for ammunitons. The Annex remained active until its placement on the Base Realignment and Closure (BRAC) list in 1995. Pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (DERCLA), the Sudbury Armex was placed on the National Priorities List (NPL) in 1990 bacause of environmental contamination associated with historic under-ground storage tanks, ammunition demoition areas, fire training areas, and disposal of var-ious laboratory waste. Since its placement on the NPL, long term monitoring and remedia-tion activities have taken place at the con-terminated sites, which have proven to be successful. The Annex was deleted from the NPL in 2002. Currently, remaining activities (O&M) of the landfill cap, annual groundwa-ter monitoring at Area of Concern 7, and evaluation of land use controls. In 2005, ownership of most of the site property trans-tered to the U.S. Fish and Wildlife Service as the Assabat River National Wildlife Refuge. As required under regulations, a revisiw must be conducted every five years to protected. More detailed information on this site can be tound on the U.S. Environment is protected. More detailed information on this site can be tound on the U.S. Environment is protection Agency (EPA) web page at 1 thrtp://cumuls.epa.gov/supercpad/cursites/csi tindo.cfm/ide1000685mssppermed To submit comments and questions regard-ing the Five+Year Review, process or site clean-tup, please contract:

Department of the Army Base Realignment and Closure Division U.S. Army Garrison Fort Devens 30 Quebec Street, Unit 100. Devens, MA 01434-4479 Office: 978-796-2205 Email: Robert, j.simeone.civ@mail.mil

AD#13382204 Hudson Sun 2/4/16

PIEDRA JR. MATTER LEGAL NOTICE Commonwealth of Massachusetts The Trial Court Middlesex Probate and Family Court 208 Cambridge Street Cambridge, MA 02141 (617) 768-5800

Docket No. MI15A0206AD

CITATION G.L. c. 210, § 6

In the matter of: Cesar Alexander Piedra Jr.

To: Cesar A Piedra

and persons interested in a petition for the adoption of said child and to the Department of Children and Families of said Commonweawealth. A petition has been presented to said court

ZBA/571 A Main Street LEGAL NOTICE Town of Hudson oning Board of Appeals

Notice is hereby given of a Public Hearing to be held by the Hudson Zoning Board of Appeals on Thursday, February 11, 2016 at 7:00 pm in the Selectmen's Hearing Room of Town Hall on the following application(s):

A7

That of Kathleen Adams, James Kane Trustees of Kane Industrial Trust and Roger Kane petitioner for the property located at 571 A Main Street, Assessors Map 0035, Parcel C116 seeking:

al Permit under Section 3.3.10 a Speci

to construct a 28,000 square foot industrial building within the Watershed Protection District in the M-6 Industrial District or any other Special Permits or Variance as may appear necessary at the hearing.

Applications may be reviewed at the Town Clerk's office of the Planning Department during pormal business hours.

Dorothy Risser, Clerk Hudsor Zoning Board of Appeals

AD#1385311

Hudson Sun 1/28, 2/4/16

Apsley Street LEGAL NOTICE Town of Hudson Public Notice of Hearing

Notice is hereby given that the Hudson Planning Board will hold a Public Hearing under the provisions of the Town of Hudson Protective Zoning By-Laws. (Section 7.1.7.1 as most recently amended) on Tuesday, February 16, 2016, at 7:00 pm in the Selectmen's Hearing Room of Town Hell, 78 Wain Street. The hearing is on a proposal to expand and reconligure parking lot on the property located at 59 Apsloy Streat, and known on Assessor's Map 0018 as Parcel 0200. The application being filed by Dave Hykbost. Rykbo

Applications may be reviewed at the Planning Department in Town Hall during normal business hours.

Robert D'Amelio Chairman

Ad#13385247 Hudson Sun 1/28, 2/4/16





MORTGAGEE'S NOTICE OF SALE OF REAL ESTATE By virtue and in execution of the Power of Sale contained in a certain Mortgage given by Frank C. Harmon and Gladys M. Harmon, as tenants by the entirety to Mortgage Electronic Registration Systems, Inc., as nominee for Franklin American Mortgage Company, a Tennessee Corporation, its successors and assigns, dated June 13, 2013 and recorded with the Middlesex County (Southern District) Registry of Deeds at Book 62009, Page 546 subsequently assigned to Wells Fargo Bank, N.A. by Mortgage Electronic Registration Systems, Inc., as nominee for Franklin American Mortgage Company, a Tennessee Corporation, its successors and assigns by assignment recorded in said Registry of Deeds at Book 63177, Page 447; of which Mortgage the undersigned is the present holder for breach of the conditions of said Mortgage and for the purpose of foreclosing same will be sold at Public Auction at 10:00 AM on February 9, 2016 at 37 Markham Circle, Ayer, MA, all and singular the premises described in said Mortgage, to wit: A certain parcel of land, together with the buildings thereon situated in Ayer, Middlesex County, Massachusetts bounded and described as follows: SOUTHERLY in a curving line by Markham Circle, as shown on a plan to be hereinafter mentioned, Fifty-Three shown on a plan to be hereinafter mentioned, Fifty-Three and Twenty six Hundredths (53.26) feet; SOUTHWESTERLY by Lot D, as shown on said Plan, Ninety-seven and Ninety-three Hundredths (97.93) feet; NORTHWESTERLY by land of Margrite L. Ryan, as shown on said Plan, One Hundred Twenty-eight and Eighty-four Hundredths (128.84) feet; NORTHEASTERLY but more NORTHERLY by land of Feltus, as shown on said Plan, forty-three (43) feet; and NORTHEASTERLY but more EASTERLY by Lot 16, as shown on said Plan, One Hundred Thirty-nine and Twenty-four Hundredths One Hundred Thirty-nine and Twenty-four Hundredths (139.24) feet. Containing 12,492 square feet of land, more or less. The said parcel of land is shown as Lot 17 more of less. The said parcel of rand is shown as Lot I' on a Plan entitled: 'Development in Ayer, Mass., made for Thrift-way Stores, Inc. dated May, 1954, Charles A. Perkins Co., Civil Engineers, their plan no. M-232A, filed with Middlesex County Registry of Deeds, Book 8299, page 188. Together with the right to the use of said Markham Circle as a way subject, however, to the right of any and all other persons lawfully entitled to the use thereof for such numces as are applicable to the use thereof, for such purposes as are applicable to the use of ways in the Town of Ayer. Also a certain parcel of land situated on the Northwesterly side of Markham Dircle, Ayer, Massachusetts, and being bounded and escribed as follows: BEGINNING at a point 97.93 feet orthwesterly from a 'set RR spike' in the driveway at e northwesterly side of Markham Circle; THENCE N. degrees 13'57" W. by land designated as being of the Family partnership' 10 feet; THENCE N. 21 degrees 9'55" E by land of William R. Feltus, 'Elray Trust' 46 feet; THENCE S 65 degrees 40'08" E by land of rvais, Inc. 10 feet; THENCE S 21 degrees 19'33" W land now or formerly of the grantor 128.84 feet; taining 1,290 square feet. Being shown as Parcel B a plan entitled "Land in Ayer, Mass., Surveyed for dall S. and Kathleen J. Speare, July, 1979, Charles erkins Co., Inc., Civil Engineers and Surveyors, Plan S-3646", which plan is recorded in the Middlesex uth Registry of Deeds as Plan No. 1148 of 1979 in ook 13798, Page 725. Being the same premises veyed to us by deed of Federal Home Loan Mortgage Corporation dated March 13, 2013 and recorded herewith. he premises are to be sold subject to and with the benefit of all easements, restrictions, building and hing laws, liens, attorney's fees and costs pursuant to M.G.L.Ch.183A, unpaid taxes, tax titles, water bills, unicipal liens and assessments, rights of tenants and parties in possession. TERMS OF SALE: A deposit of FIVE THOUSAND DOLLARS AND 00 CENTS (\$5,000.00) in the form of a certified check, bank treasurer's check or money order will be required to be delivered at or before the time the bid is offered. The successful bidder will be required to execute a Foreclosure Sale Agreement immediately after the close of the bidding. The balance of the purchase price shall be paid within thirty (30) days from the sale date in the form of a certified check, bank treasurer's check or other check satisfactory to Mortgagee's attorney. The Mortgagee reserves the right to bid at the sale, to reject any and all bids, to continue the sale and to amend the terms of the sale by written or oral announcement made before or during the foreclosure sale. If the sale is set aside for any reason, the Purchaser at the sale shall be entitled only to a return of the deposit paid. The purchaser shall have no further

Devens Enterprise Commission The Devens Enterprise Commission will conduc Public Hearing on Tueso February 23, 2016 at 6: PM in the Vicksburg Conference Room at 3 Andrews Parkway, Devens, MA 01434 to cr sider MassDevelopmen Level 2 zoning variance request from minimum size requirements for Lo S-4c located at 31 MacArthur Avenue (Devens Parcel #19-4 1601). Property locate within the Innovation an **Technology Business** Zone. Plans and support information may be view at the Town Halls of Aye Harvard, Shirley and at th **Devens Enterprise** Commission office durin normal business hours. January 29, 2016 February 5, 2016 **Devens Enterprise** Commission The Devens Enterprise Commission will conduct

Public Hearing on Tuesda February 23, 2016 at 6:4 PM in the Vicksburg Conference Room at 33 Andrews Parkway, Devens, MA 01434 to consider Salad Bowl Farms, LLC's request to amend their August 6, 2015 Level 2 Unified Permit site plan to include a new loading dock and associated site improvements. Property located at 105 Walker Road (Devens Parcel #39-14-500) within the Environmental Business Zone. Plans and supporting information may be viewed at the Town Halls of Ayer, Harvard, Shirley and at the Devens Enterprise

Commission office during normal business hours.

January 29, 2016 February 5, 2016

Commonwealth of Massachusetts The Trial Court **Probate and Family Court Middlesex Division** 208 Cambridge Street East Cambridge, MA 02141 (617)768-5800 Docket No. MI15P7004EA INFORMAL PROBATE **PUBLICATION NOTICE** Estate of Melissa Elizabeth D'Eon; Date of Death 01/12/2015 To all persons interested in the above-captioned estate, by Petition of Petitioner Marc J. D'Eon of Pepperell, MA, Mark J. D'Eon of Pepperell, MA has been informally appointed as the Personal Representative of the estate to serve Without Surety on the bond. The estate is being

administered under informal procedure by the page 2

The Stow Independent

January 27, 2016

Linda Hathaway

Town Clerk

Town Building

THE INDEPENDENT CLAUSE

The Stow Independent is now active on Facebook! Search for "The Stow Independent"

Special Town Meeting is Monday night. Please read up on the issues and use your vote to help make town decisions. The Minuteman School District has a lot of information on their website and I will post the articles from the Jan. 13 edition related to the warrant on our website for reference - www.stowindependent.com

Cyndy Bremer, publisher/editor/production editor@stowindependent.com; 978-897-7869

Message From Stow Rec Commission Member:

Fellow Stow Residents,

Take advantage of the Ice Rink at Community Park!! Given the rink depends on the weather to keep the ice - this is the time. Suggest you try skating at night, under the lights; this is a really 'cool' experience.

The rink is located at Community Park, on the soccer field. Community Park is located on Old Bolton Road, just next door to Bose. See the Rink Schedule posted in this issue of the SI. Parking and Rink use is free. (Please stay off the ice if the rink is closed - when ice is soft).

John Sangermano, Stow Rec Commission

Stow Community Park's Ice Skating Rink Schedule: Jan. 27 - Feb 2

•PLEASE DO NOT GO ON ICE IF RINK IS CLOSED.

Rink utilization schedule subject to change due to weather. Schedule also available on the Stow Recreation Website under Winter Programs. Rink closes @ 8pm.
Note: Please be safe and wear a helmet.

PLEASE CHECK THE STOW RECREATION WEBSITE FOR SCHEDULE CHANGES BEFORE HEADING OUT! Wednesday, January 27

ricancoady, ou			
	8am-8pm	Open Ice	
Thursday, Janu	ary 28		
	8am-6pm	Open Ice	7 8
	6pm-8pm	SMS Youth Practice	TA S
Friday, January	29		
	8am-6pm	Open Ice	Bil.
	6pm-8pm	Split Rink /Skate-Stick	
Saturday, Janua	ary 30	-	V
-	8am-10am	SMS stick/skate	
	10am-11am	Ice Resurface	
	11am-1pm	FREE Learn-to-Skate – All ag	ges welcome
	1pm-3pm	Community Skate (Skate Gua	ards Assisting)
	3pm-5pm	Stick Time – all ages	
	5pm-8pm	Open Ice	
Sunday, Janua	ry 31		
	8am-10am	NEPH skate	
	10am-11am	Ice Resurface	
	11am-12pm	Open Ice	
	12pm-2pm	Stick Time (12 years old and	under)
	2pm-5pm	Community Skate (Skate Gu	ards assisting)
	5pm-8pm	Split Rink/Skate-Stick	
Monday, Februa	ary 1 and Tuesday	y, February 2	
	8am-8pm	Open Ice – No Scheduled Us	e

PUBLIC NOTICE FOR FIVE-YEAR REVIEW FORMER FORT DEVENS SUPERFUND SITE – SUDBURY ANNEX DEVENS, MASSACHUSETTS

The U.S. Army Corps of Engineers (USACE) is announcing the start of the fourth Five-Year Review of the remedial actions taken at the former Fort Devens Sudbury Training Annex Superfund Site, located in the towns of Hudson, Stow, Maynard, and Sudbury, MA. The purpose of a Five-Year Review is to evaluate whether the cleanup methods put in place at the site are working as designed and continue to remain protective of human health and the environment as required by the Superfund law. It is anticipated that this Five-Year Review will be completed in September 2016. The USACE invites the local community to take part in the review process by participating in a community interview by submitting comments directly to the Department of the Army.

BACKGROUND: Camp Devens was established in 1917 as a temporary training area for soldiers

380 Great Road 978-897-4514x1 www.stow-ma.gov

Clerk's Corner

2016 TOWN CENSUS!

WATCH for your 2016 Annual Town Census in the mail this week. Please REVIEW it, make changes or corrections if necessary, SIGN it, and SEND IT BACK to us (via mail or drop it off at the Town Building). Don't put it in a stack of mail... Send it Right Back!

DOG TAGS ONLY \$10!!

Dog Licenses applications are available online & at the Clerk's office. Call us if you are unsure if you have a current rabies certificate on file. 978-897-5034. Check the town website for more information about the census and dog tags. http://www.stow-ma.gov/Pages/StowMA_Clerk/index

TOWN GOVERNMENT MEETINGS

Visit www.stow-ma.gov for updates

Thursday, January 28

Capital Planning Committee 7:30 PM Finance Committee meeting jointly with Capital Planning re: Minuteman School Monday, February 1 Special Town Meeting 7:00 PM Selectmen's Meeting 7:00 PM Monday, February 9 Community Preservation Meeting 7:30 PM Zoning Board of Appeals 7:30 PM

Correction...

In the Superintendent Search article, the salary range suggested by MASC to advertise for a new superintendent should have said \$180,000 - \$200,000 (not \$80,000 - \$200,000). As stated, the SC has yet to make a final decision on that range.

Community Input Wanted for Superintendent Search

Focus group for Nashoba District community members on Thursday, Jan. 28

The Nashoba Regional School Committee is seeking input from parents and the community-at-large as we begin the process of selecting our next superintendent. Our Search Consultant from the Massachusetts Association of School Committees (MASC) will be conducting focus groups to gather this input. An online survey is also available. The feedback from the focus groups and online survey will inform the School Committee as it considers the selection criteria and qualifications for the next Superintendent.

A community-wide focus group for parents and community members in Bolton, Lancaster and Stow will be held on **Thursday**, **Jan. 28** at 6:00 PM in the Florence Sawyer Cafeteria, Bolton, MA

If you are unable to attend a focus group, but would like to provide input, an online survey is available at: https://www.surveymonkey.com/r/Nashoba

If you have any questions, about the Superintendent search process please contact a School Committee representative. Contact information can be found in the School Committee tab of the district website at www.nrsd.net.

We look forward to your participation as we select Nashoba's next superintendent. Thank you.

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during World War I. In 1932, the site was named Fort Devens and made a permanent installation with the primary mission of commanding, training, and providing logistical support for non-divisional troop units. The land in the former Fort Devens Sudbury Training Annex was purchased by the U.S. Army in 1942 and was used as a training location for troops and a storage area for ammunitions. The Annex remained active until its placement on the Base Realignment and Closure (BRAC) list in 1995. Pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Sudbury Annex was placed on the National Priorities List (NPL) in 1990 because of environmental contamination associated with historic underground storage tanks, ammunition demolition areas, fire training areas, and disposal of various laboratory waste. Since its placement on the NPL, long term monitoring and remediation activities have taken place at the contaminated sites, which have proven to be successful. The Annex was deleted from the NPL in 2002. Currently, remaining activities include ongoing operation and maintenance (O&M) of the landfill cap, annual groundwater monitoring at Area of Concern 7, and evaluation of land use controls. In 2005, ownership of most of the site property transferred to the U.S. Fish and Wildlife Service as the Assabet River National Wildlife Refuge. As required under regulations, a review must be conducted every five years to ensure human health and the environment is protected. More detailed information on this site can be found on the U.S. Environmental Protection Agency (EPA) web page at: http://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0100685&msspp=med

To submit comments and questions regarding the Five-Year Review process or site clean-up, please contact:

Department of the Army Base Realignment and Closure Division U.S. Army Garrison Fort Devens 30 Quebec Street, Unit 100 Devens, MA 01434-4479 Office: 978-796-2205 Email: Robert.j.simeone.civ@mail.mil

Taxing (Otata / Zing		
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SUDBURY TOWN CRIER

LSB Players Winter One-Ac

Legal Notices

CC/PUBLIC HEARING 3/7/16 LEGAL NOTICE NOTICE OF PUBLIC HEARING SUDBURY CONSERVATION COMMISSION

The Sudbury Conservation Commission will hold a public hearing on a Wetlands Protection Act and Wetlands Bylaw Notice of Intent for lencing of the bridge over Pantry Brook on the Inactive Lowell Secondary Bail Line (proposed Bruce Freeman Bail Trail) off Concord Road, Sudbury MA. Applicant for this project is MassDOT Rail and Transit Division. The meeting will be held on Monday, March 7, 2016 at 6:35pm in the DPW Building, 275 Old Lancaster Rd., Sudbury MA. Copies of the application may be reviewed at the Conservation office at 275 Old Lancaster Rd, Sudbury MA. during business hours.

SUDBURY CONSERVATION COMMISSION Jan. 28, 2016

AD#13387656 Sudbury TC 2/4/16

FITZGERALD ESTATE LEGAL NOTICE Commonwealth of Massachusetts The Trial Court Probate and Family Court Middlesex Probate and Family Court 208 Cambridge Street Cambridge, MA 02141 (617) 768-5800 Docket No. MI16P0228EA

CITATION ON PETITION FOR FORMAL ADJUDICATION

Estate of: Maurice J. Fitzgerald, Jr

Also known as: Maurice J. Fitzgerald

Date of Death: 09/07/2015

To all interested persons:

Petition for Formal Probate of Will with Appointment of Personal Representative has been filed by David Fitzgerald of Sudbury MA requesting that the Court enter a for-mal Decree and Order and for such other relief as requested in the Petition.

The Petitioner requests that: David Fitzgerald of Sudbury MA be appoint-ed as Personal Representative of said estate to serve Without Surety on the bond in an unsupervised administra-tion

IMPORTANT NOTICE

IMPORTANT NOTICE You have the right to obtain a copy of the Petition from the Petitioher or at the Court. You have a right to object to this proceeding. To do so, you or your attorney must file a writ-ten appearance and objection at this Court before: 10:00 a.m. on the return day of 03/11/2016.

This is NOT a hearing date, but a deadline by which you must file a written appearance and objection if you object to this proceeding. If you fail to file a timely written appearance and objection followed by an affidavit of objections within thirty (30) days of the return day, action may be taken without further notice to you.

UNSUPERVISED ADMINISTRATION UNDER THE MASSACHUSETTS UNIFORM PROBATE CODE (MUPC) A Personal Representative appoint-ed under the MUPC in an unsuper-vised administration is not required to file an inventory or annual accounts with the Court. Persons interested in the estate are entitled to notice reparding the administrato notice regarding the admiristra-

FIVE-YEAR REVIEW LEGAL NOTICE PUBLIC NOTICE FOR FIVE-YEAR REVIEW FORMER FORT DEVENS SUPERFUND SITE - SUDBURY ANNEX DEVENS, MASSACHUSETTS

The U.S. Army Corps of Engineers (USACE) is announcing the start of the fourth Five-Year Review of the remedi-al actions taken at the former Fort Devens Sudbury Training Annex Superfund Site, located in the towns of Hudson, Stow, Maynard, and Sudbury, MA. The purpose of a Five-Year Review is to evaluate whether the cleanup methods put in place at the site are working as designed and con-tinue to remain protective of human health and the environment as required by the Superfund law. It is anticipated that this Five-Year Review will be completed in September 2016. The USACE invites the local communi-ty to take part in the review process by contention for the september process by ty to take part in the review process by participating in a community interview by submitting comments directly to the Department of the Army.

by submitting comments directly to the Department of the Army. BACKGROUND: Camp Devens was established in 1917 as a temporary training area for soldiers during World War I. In 1932, the site was named Fort Devens and made a permanent installation with the primary mission of commanding, training, and providing logistical support for non-divisional troop units. The land in the former Fort Devens Sudbury Training Annex was purchased by the U.S. Army in 1942 and was used as a training location for troops and a storage area for ammuni-tions. The Annex remained active until tes placement on the Base Realignment and Closure (BRAC) list in 1995. Pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Sudbury Annex was placed on the National Priorities List (NPL) in 1990 because of environ-mental contamination associated with historic underground storage tanks, ammunition demolition areas, fire trai-ing areas, and disposal of various lab-oratory waste. Since its placement on the NPL, long term monitoring and remediation activities include ongoing operation and maintenance (O&M) of the landfill cap, annual groundwater monitoring at Area of Controls. In 2005, ownership of most of the Site property transferred to the Assabet River National Wildlife Reluge. As required under regulations, a review must be conducted every five years to ensure human health and the anvironment Is protected. More detailed information on this site can be found on the U.S. Environmental Protection Agency (EPA) web page att http://cumulis.epa.gov/superopad/cur-sites/csittof.cdm?d=01006858msspp-med med

To submit comments and questions regarding the Five-Year Review process or site clean-up, please con-tact:

Department of the Army

Base Realignment and Closure Division

U.S. Army Garrison Fort Devens

30 Quebec Street, Unit 100

Devens, MA 01434-4479

Office: 978-796-2205

Email: Robert j.simeone.civ@mail.mit



The LSB Players cast of "Cagebirds," by David Campton, front row, from left: Ava Liepert and Catriona Morris; back row, Caroline MacKeen, Olivia Bodley, Charlotte Dezen, Georgia Baltay, Natalie Volo and Maggie Dwyer. Performances are Feb. 4-6 at Lincoln-Sudbury Regional High School Rogers Black Box Theatre. Tickets subject to availability. For information, email Isbtickets@gmail.com.



The LSB Players ca Pat Cook, front rov Jack Troiano, Elana Olivia Silva, Sam H Hannah Quirk. COU



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B.2 Public Participation Interviews

FIVE YEAR REVIEW SITE SURVEY		
Former Sudbury Annex		
Name:	Robert Simeone	
Title:		
Organization:	Army (BRAC)	
Address:		
Interview Date	2/25/2016	
E-Mail:	robert.j.simeone.civ@mail.mil	
Telephone:	978-796-2205	

Authorities from State/local government agencies or federal facilities

Have any breaches of the Institutional Controls (ICs) occurred, complaints been filed, or unusual activities been noted at the site (e.g., citizens are consuming fish at a contaminated sediment site)? If so, how were they addressed?

No known breaches.

Has the federal agency (for a federal facility site) reported on the status of the ICs or LUCs as required? What type of monitoring is currently being conducted or has been conducted to determine IC compliance (e.g., follow-up inspections)?

Yes, status of ICs and LUCs have been reported as required. Annual LTM Reports are released every year, as well as Inspection Reports detailing inspection of the landfill cap and AOC A7. No inspections anywhere else, maybe at P31 and P58 as part of the main inspection.

Are ICs being enforced? What is the enforcement plan in the event of an IC breach?

Yes, ICs are being enforced with landowners. If there is a breach, the entity will be called to clarify the breach and any issues.

Are there any new developments, either constructed or planned, in the area of which the entity is aware?

No known developments.

Has land use changed or is it anticipated to change (e.g., buildings, either constructed or planned, exist in the area)?

No known changes or plans. Land use was set in the transfer documents.

What procedures are in place for EPA and PRPs to receive notice of any proposed changes to the ICs?

Procedures are set for notice, typically letters of correspondence. If property was to transfer (such as USFWS selling some of the land), then they would be required to notify changes to the Army.

Does the entity have an IC tracking system or other applicable database (e.g., GIS maps) to keep information about ICs?

Army does not. They use the annual reports to keep track of up to date information on ICs.

Can the ICs or engineering controls be registered in the state's one-call system?

Not sure.

How has the IC process been working and are there any suggestions for improvement?

Working fine, no suggestions.

FIVE YEAR REVIEW SITE SURVEY		
Former Sudbury Annex		
Name:	Christine Williams	
Title:	Remedial Project Manager	
Organization:	USEPA	
Address:		
Interview Date	2/25/2016	
E-Mail:	williams.christine@epa.gov	
Telephone:	617-918-1384	

Authorities from State/local government agencies or federal facilities

Have any breaches of the Institutional Controls (ICs) occurred, complaints been filed, or unusual activities been noted at the site (e.g., citizens are consuming fish at a contaminated sediment site)? If so, how were they addressed?

Only knowledge is of the USFWS' plan for a well outside of the AOC A9 area. Not sure of the disposition, knows there are no ICs in A9 other than not disturbing the subsurface below 4 feet (which a well clearly would). Not sure of how much of a concern this is.

Has the federal agency (for a federal facility site) reported on the status of the ICs or LUCs as required? What type of monitoring is currently being conducted or has been conducted to determine IC compliance (e.g., follow-up inspections)?

Federal agency does not do much with reporting on ICs or LUCs, other than having contracts.

Are ICs being enforced? What is the enforcement plan in the event of an IC breach?

This is a question for the Army. If they know of a breach, they would need to contact the EPA and the state.

Are there any new developments, either constructed or planned, in the area of which the entity is aware?

Not aware of any (other than potential USFWS well).

Has land use changed or is it anticipated to change (e.g., buildings, either constructed or planned, exist in the area)?

Not sure of changes or plans, this is a question more for the owners. Though has heard of plans for USAF to excess some land, but does not know any details.

What procedures are in place for EPA and PRPs to receive notice of any proposed changes to the ICs?

Federal Facilities Agreement is the procedure.

Does the entity have an IC tracking system or other applicable database (e.g., GIS maps) to keep information about ICs?

Not aware of any – the Army should be tracking.

Can the ICs or engineering controls be registered in the state's one-call system?

Not sure of possibility, but strongly doubts it, as the one-call system is more for utilities. David Chaffin would know better.

How has the IC process been working and are there any suggestions for improvement?

The Army needs to generally stay more engaged, not just at Sudbury but at all sites. They need to be involved, and not hand off the work and reports to contractors and blindly sign them. Additionally, maintenance work needs to be continued and improved at the site, such as maintaining the wells and well screens.

FIVE YEAR REVIEW SITE SURVEY		
Former Sudbury Annex		
Name:	David Chaffin	
Title:	Project Manager	
Organization:	Massachusetts Department of Environmental Protection	
Address:	One Winter Street, Boston, MA	
Interview Date	2/25/2016	
E-Mail:	David.chaffin@state.ma.us	
Telephone:	617-348-4005	

Mr. Chaffin was contacted via telephone on February 24, 2016. Mr. Chaffin indicated it was not necessary to interview him as he would be commenting on the Five Year Review document.

Authorities from State/local government agencies or federal facilities

Have any breaches of the Institutional Controls (ICs) occurred, complaints been filed, or unusual activities been noted at the site (e.g., citizens are consuming fish at a contaminated sediment site)? If so, how were they addressed?

Has the federal agency (for a federal facility site) reported on the status of the ICs or LUCs as required? What type of monitoring is currently being conducted or has been conducted to determine IC compliance (e.g., follow-up inspections)?

Are ICs being enforced? What is the enforcement plan in the event of an IC breach?

Are there any new developments, either constructed or planned, in the area of which the entity is aware?

Has land use changed or is it anticipated to change (e.g., buildings, either constructed or planned, exist in the area)?

What procedures are in place for EPA and PRPs to receive notice of any proposed changes to the ICs?

Does the entity have an IC tracking system or other applicable database (e.g., GIS maps) to keep information about ICs?

Can the ICs or engineering controls be registered in the state's one-call system?

How has the IC process been working and are there any suggestions for improvement?





General Public Questionnaire

FIVE YEAR REVIEW SITE SURVEY		
Former Sudbury Annex		
Name:	Libby Herland	
Title:	Refuge Manager	
Organization:	USFWS	
Address:		
Interview Date	2/25/2016	
E-Mail:		
Telephone:	978-443-4661 x11	

What is your overall impression of the environmental cleanup work at the Former Sudbury Annex?

Good.

What effects has environmental cleanup work at the Annex had on the surrounding community?

Not sure how much "cleanup" was done, but thinks there are definitely some people that are not convinced the site is totally clean. However, most people think it's good, and appreciate the clean environment and area that the cleanup provides.

Are you aware of any community concerns regarding the site and cleanup conducted at the Annex?

Not aware of any concerns.

Are you familiar with the various processes that Army is utilizing to clean up the environmental sites?

Using wells to monitor the area, landfill to keep contamination in, but no active treatment system.

Do you feel comfortable in the process that Devens is utilizing to clean up the environmental sites?

Yes.

Do you feel informed about the cleanup activities and progress?

Yes.

Do you have any other comments, suggestions or recommendations regarding the environmental cleanup work conducted at the Annex?

No.





General Public Questionnaire

FIVE YEAR REVIEW SITE SURVEY		
Former Sudbury Annex		
Name:	Mike Moran	
Title:		
Organization:	FEMA	
Address:		
Interview Date	2/24/2016	
E-Mail:	Mike.moran@fema.dhs.gov	
Telephone:	978-461-5535	

What is your overall impression of the environmental cleanup work at the Former Sudbury Annex?

I have noticed no new projects. What there is seems to be acceptable.

What effects has environmental cleanup work at the Annex had on the surrounding community?

It has allowed local and visiting residents to enjoy the property.

Are you aware of any community concerns regarding the site and cleanup conducted at the Annex?

No.

Are you familiar with the various processes that Army is utilizing to clean up the environmental sites?

I believe to date, this is complete.

Do you feel comfortable in the process that Devens is utilizing to clean up the environmental sites?

Again, I thought the cleanup was complete. If not, it is not of public knowledge that anything is being done at this time.

Do you feel informed about the cleanup activities and progress?

I guess not. Unless it is complete.

Do you have any other comments, suggestions or recommendations regarding the environmental cleanup work conducted at the Annex?

NO!

Note: If there is an environmental cleanup in progress ? I feel the public needs to be informed, as many folks are using the park.





FIVE YEAR REVIEW SITE SURVEY		
Former Sudbury Annex		
Name:	Penny Reddy	
Title:		
Organization:	USACE	
Address:		
Interview Date	2/25/2016	
E-Mail:	Penelope.Reddy@usace.army.mil	
Telephone:	978-318-8160	

Mr. Chaffin was contacted via telephone on February 24, 2016. On February 25, 2016, Ms. Reddy indicated that she has very little knowledge of the site and was not sure if she could provide informed reponses.

Authorities from State/local government agencies or federal facilities

Have any breaches of the Institutional Controls (ICs) occurred, complaints been filed, or unusual activities been noted at the site (e.g., citizens are consuming fish at a contaminated sediment site)? If so, how were they addressed?

Has the federal agency (for a federal facility site) reported on the status of the ICs or LUCs as required? What type of monitoring is currently being conducted or has been conducted to determine IC compliance (e.g., follow-up inspections)?

Are ICs being enforced? What is the enforcement plan in the event of an IC breach?

Are there any new developments, either constructed or planned, in the area of which the entity is aware?

Has land use changed or is it anticipated to change (e.g., buildings, either constructed or planned, exist in the area)?

What procedures are in place for EPA and PRPs to receive notice of any proposed changes to the ICs?

Does the entity have an IC tracking system or other applicable database (e.g., GIS maps) to keep information about ICs?

Can the ICs or engineering controls be registered in the state's one-call system?

How has the IC process been working and are there any suggestions for improvement?





General Public Questionnaire

FIVE YEAR REVIEW SITE SURVEY		
	Former Sudbury Annex	
Name:	Tom Eagle	
Title:		
Organization:	USFWS	
Address:		
Interview Date	2/24/2016	
E-Mail:		
Telephone:	978-443-4661 x12	

What is your overall impression of the environmental cleanup work at the Former Sudbury Annex?

Do not know much, only aware that they let people in to do work.

What effects has environmental cleanup work at the Annex had on the surrounding community?

Not aware of any effects.

Are you aware of any community concerns regarding the site and cleanup conducted at the Annex?

Not aware of any concerns.

Are you familiar with the various processes that Army is utilizing to clean up the environmental sites?

Not really familiar, just aware that they let people in to do work on the fenced in site.

Do you feel comfortable in the process that Devens is utilizing to clean up the environmental sites?

Yes, but do not know much.

Do you feel informed about the cleanup activities and progress?

No, but feels he is not the person that is supposed to be informed (Libby Herland is more involved in this).

Do you have any other comments, suggestions or recommendations regarding the environmental cleanup work conducted at the Annex?

No other comments.











Appendix C-2 Long-Term Trends Wells JO-A7-M63/SUD-A07-065 Trichloroethene Area of Contamination A7



Appendix C-3 Long-Term Trends Wells JO-A7-M63/SUD-A07-065 Tetrachloroethene, Trichloroethene and 1,1,2,2-Tetrachloroethane Area of Contamination A7



Appendix C-4 Long-Term Trends Well OHM-A7-51 1,1,2,2-Tetrachloroethane Area of Contamination A7



Appendix C-5 Long-Term Trends Wells JO-A7-M63/SUD-A07-065 Gamma-BHC (Lindane) Area of Contamination A7







Appendix C-7 Long-Term Trends Well OHM-A7-08 4,4'-DDD Area of Contamination A7







GEOTECHNICAL ENGINEERING ANNUAL INSPECTION REPORT FALL 2011

AREA OF CONTAMINATION A7 FORMER SUDBURY TRAINING ANNEX SUDBURY, MASSACHUSETTS

2 November 2011



1.0 INTRODUCTION

The RCRA Subtitle C landfill cap was constructed over the existing landfill at AOC A7 to eliminate the potential risk to human health and the environment associated with exposure to wastes; minimize off-site migration of contaminants; and limit infiltration to the underlying waste within the landfill area, thereby minimizing leachate generation and groundwater degradation. The RCRA cap consists of the following geosynthetic layers: geocomposite gas vent layer, geosynthetic clay liner (GCL), 40 mil linear low density polyethylene (LLDPE) geomembrane, and geocomposite drainage layer. Above the geosynthetic components are 15 inches of drainage sand, 15 inches of filter sand, and 6 inches of vegetative soil (topsoil). The cap was completed in the fall of 1996. The A7 landfill cap inspection drawing is presented in Figure 1.

1.1 Landfill Cap Inspection

Personnel from the U.S. Army Corps of Engineers, New England District (NAE), inspected the Sudbury Training Annex Landfill at Area A7 on November 2, 2011. The landfill was partially covered with snow from a recent storm. No maintenance activities were performed during these inspections. Observations were made regarding the vegetative cover, vegetation types, erosion, settlement, and general condition of the various features. Appendix A of this report contains the Inspection and Maintenance checklists and Landfill Gas Summary tables which summarize the findings of these inspections. A narrative of the findings of these inspections follows.

The landfill cap is in excellent condition with no actively eroding areas or settlement (Photo 1). In general, the cap vegetation appears healthy, dense, and provides complete coverage of most areas of the cap, with grass and clover predominating. The cap and adjacent area vegetation were mowed in the Fall of 2011. No encroachment of wetland species on the cap was seen. It is recommended that future mowing of the cap continue to include mowing of the field area adjacent to the cap to prevent encroachment of woody and wetland species on the cap.

1.2 Access Road Inspection.

The access road from the entry gate to the cap is in good condition (Photo 2), however vegetation has established within the gravel surface, and in the summer months is overgrown (Photo 3, 2010). There are no ruts, potholes, or eroded areas. Herbicide should be applied as part of annual maintenance.

1.3 Security Fence Inspection

The security perimeter fence is in good condition. There were no branches on top of the fence observed, and there were no sagging or leaning sections noted, and the main gate is operating normally. In general, trees should periodically be cleared from fence area as they naturally grow or fall onto the fence.



2.0 DRAINAGE SYSTEM

The drainage system functions in conjunction with the landfill cap to facilitate the drainage of surface water and infiltrated water off the cap. The drainage system consists of the following components: geocomposite drainage layer, perimeter stone drain along the toe-of-slope, perimeter drainage channels, and a riprap lined outlet area (located at the northeast corner of the landfill (Photo 4)). The A7 landfill inspection drawing is presented in Figure 1.

The Sudbury Training Annex Landfill Drainage System at Area A7 was inspected on November 2, 2011 by personnel from the U.S. Army Corps of Engineers, New England District (NAE). No maintenance activities were performed during these inspections. Observations were made regarding the vegetative cover, vegetation types, erosion, and general condition of the drainage system. Appendix A of this report contains the Inspection and Maintenance checklists which summarize the findings of this inspection. A narrative of the findings of these inspections follows.

The cap drainage system is in good condition. Drainage channels are free of sediment and debris, however an herbicide should be applied to the riprap areas to eliminate unwanted vegetation which has become established (Photo 5). All other areas of the drainage channels are free of unwanted vegetation. The Grass on drainage channel bottoms is in excellent condition. The vegetation on the side slopes is healthy and dense (Photo 6).

The toe drain appears to be functioning properly, and there are no associated slope stability or erosion problems at this time. Toe drains should be cleared of moss growth and other debris which is accumulating on the geotextile covering the drainage stone (Photo 7). The toe drain should continue to be monitored for vegetative growth in the future, and the growth should be periodically removed to maintain the proper operation of the toe drain.

3.0 GAS VENT SYSTEM

A passive gas venting system was installed to facilitate the ventilation of any methane generated from the degrading waste material beneath the landfill cover system. The passive system consists of four 6-inch diameter gas vents (Photo 8).

The gas monitoring activities were performed on November 2, 2011 by personnel from the U.S. Army Corps of Engineers, New England District (NAE) and were consistent with historic monitoring results. Appendix A of this report contains the Landfill Gas Monitoring Table, which summarizes the findings of these inspections. A narrative of the findings of these inspections follows.

The gas vent system is in good condition. All vent pipes and bird screens are intact and functioning as intended except for minor deficiencies at V-1 and V-2. V-1 requires a new bird screen, and V-2 requires replacement of the bird screen and hose clamp, and also has two animal burrows which require filling. Gas monitoring activity at the gas vents resulted in zero readings during the inspection for methane, LEL, and VOC's and low levels of CO2. Oxygen


levels varied between 18.9% and 20.6%. The results are presented in the Table in Appendix A. A GEM 2000 landfill gas monitor was used to monitor the gas vents for methane, carbon dioxide, oxygen, and LEL. A MultiRAE+ was used to check VOC levels.

4.0 CORRECTIVE ACTION

The drainage system and gas vent monitoring system were in good condition. The toe drain geotextile should be cleared of moss and other debris in the near future. The hose clamp and bird screen should be replaced in the near future at V-1 and V-2. The animal burrows at vent V-2 require filling. Any branches on the perimeter fence should be cleared during annual maintenance. An herbicide should be used on the access road, parking lot, and riprap areas where unwanted vegetation has appeared. It is also recommended that the mowing of the cap continue to include mowing of the adjacent fields. Mowing will not take place until late August when ground-nesting songbirds are mature enough to avoid being harmed.



FIGURE



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PHOTOGRAPH LOG



Index of Photographs

- Picture 1 Looking North East at Landfill Cap from Parking Area
- Picture 2 Looking West Northwest Along Access Road
- Picture 3 Looking South East Across Parking Area and Access Road
- Picture 4 Looking South Along Northeastern Riprap Swale Toward Riprap Outlet Area
- Picture 5 Looking Northeast At Northwestern Riprap Perimeter Drainage Swale
- Picture 6 Looking South Along Grass Lined Perimeter Drainage Swale
- Picture 7 Looking at Toe Drain Geotextile at Southeastern Perimeter Drainage Swale
- Picture 8 Looking Northeast at Gas Vent 3





Picture 1



Picture 3

Picture 2



Picture 4







Picture 5

Picture 6



Picture 7



Picture 8



APPENDIX A

Inspection & Maintenance Check List



Inspection & Maintenance Check List Sudbury Training Annex A7 Landfill

Inspector: Kullberg

Date: 3 November 2011

Item	Description of Inspection Items	Check (X)	Comments
Landfill Cap	Inspect for Eroded Areas	X	No actively eroding areas observed.
	Inspect for Settlement and Ponded Water	X	No settlement or ponded water observed.
	Inspect for Wetland Species Encroachment	X	No encroachment of wetland species observed
	Inspect Vegetated Areas	X	Vegetation healthy and dense with appropriate species growing. Mowed in Fall 10.
Drainage System	Inspect Stone Toe Drain	X	Good condition, appears to be functioning properly, however some sections have moss growth and particulate clogging (See photo 7), and should be cleared. Continue to monitor for clogging, and clear as necessary in the future.
	Inspect for Eroded Areas	X	No erosion noted, no action req'd.
	Inspect Grass in Drainage Channels	X	Channel bottom grass excellent. Side slopes are adequately vegetated.
	Inspect for Debris & Unwanted Vegetation in Drainage Channels	X	No debris or unwanted vegetation observed
	Inspect Rip-Rap Areas	X	Riprap in excellent condition, grass growing in some areas of riprap but no woody species, herbicide should be applied to control vegetation.
Gas Vent System	Inspect Vent Pipe and Bird Screen	X	All vent pipes and bird screens in good condition, except for V-1 and V-2 which both need a new bird screen and hose clamp. Two animal burrows noted at V-2



Gas Vent System	Methane Monitoring Vent 1 Vent 2 Vent 3 Vent 4	X	<u>Results</u> Gas monitoring activity at the gas vents resulted in zero readings during the inspection for methane, LEL, and VOC's and low levels of CO2. Oxygen levels varied between 12.7% and 16.7%. See Table below.
Groundwater Monitoring Wells	Inspect Casings and Locks	X	Inspection done by groundwater monitoring crew
Security Fence	Inspect for Damage to or Breeches in	X	Security fence and gates in good condition.
Access Road	Inspect for Erosion, Potholes and Rutting	X	Access road in good condition, no erosion, potholes, or rutting observed; vegetation growing through gravel, apply herbicide.

Description of Maintenance Activities (as necessary):

None.

The following maintenance and monitoring activities are recommended:

- 1. Annual inspections for all components of cap and perimeter. Annual Lawn mowing and clearing of branches from fence line. Filling of animal burrows at V-2 and as required. Clear toe drain geotextile of moss and particulates.
- 2. Herbicide should be applied to all riprap areas and the gravel access road.



APPENDIX B

Landfill Gas Monitoring



Landfill Gas Monitoring Table 2

INSPECTOR: KullbergTITLE: Civil EngineerDATE: 11/2/11

ORGANIZATION: <u>CENAE-EP</u>

WEATHER: Sunny, Calm, 50 d F, snow cover

BAROMETER: 30.13 in Hg TIME: 1045 BAROMETER 30.07 in Hg TIME: 1200

Vent No.	VOC ppm PID	O ₂ % GEM 2000	LEL % GEM 2000	CO ₂ % GEM 2000	CH4 % GEM 2000	Remarks
V-1	0	20.6	0	1.1	0	No odor, Need new hose clamp and bird screen
V-2	0	19.0	0	1.9	0	No odor, Need new hose clamp and bird screen, burrows around base
V-3	0	18.9	0	3.0	0	No odor
V-4	0	20.4	0	1.7	0	No odor

CALIBRATION INFORMATION: Instrument: <u>MultiRAE+</u> Calibrated by: <u>US Environmental</u> Calibrated With: <u>100 ppm isobutylene (R.F. = 1.0)</u>

Instrument: <u>GEM 2000</u> Calibrated by: <u>US Environmental Rental Co.</u> Calibrated With: <u>15% CH₄, 15% CO₂, 20.9% O₂</u>



GEOTECHNICAL ENGINEERING ANNUAL INSPECTION REPORT FALL 2012

AREA OF CONTAMINATION A7 FORMER SUDBURY TRAINING ANNEX SUDBURY, MASSACHUSETTS

4 December 2012



1.0 INTRODUCTION

The RCRA Subtitle C landfill cap was constructed over the existing landfill at AOC A7 to eliminate the potential risk to human health and the environment associated with exposure to wastes; minimize off-site migration of contaminants; and limit infiltration to the underlying waste within the landfill area, thereby minimizing leachate generation and groundwater degradation. The RCRA cap consists of the following geosynthetic layers: geocomposite gas vent layer, geosynthetic clay liner (GCL), 40 mil linear low density polyethylene (LLDPE) geomembrane, and geocomposite drainage layer. Above the geosynthetic components are 15 inches of drainage sand, 15 inches of filter sand, and 6 inches of vegetative soil (topsoil). The cap was completed in the fall of 1996. The A7 landfill cap inspection drawing is presented in Figure 1.

1.1 Landfill Cap Inspection

Personnel from the U.S. Army Corps of Engineers, New England District (NAE), inspected the Sudbury Training Annex Landfill at Area A7 on December 4, 2012. No maintenance activities were performed during these inspections. Observations were made regarding the vegetative cover, vegetation types, erosion, settlement, and general condition of the various features. Appendix A of this report contains the Inspection and Maintenance checklists and Landfill Gas Summary tables which summarize the findings of these inspections. A narrative of the findings of these inspections follows.

The landfill cap is in excellent condition with no actively eroding areas or settlement (Photo 1). In general, the cap vegetation appears healthy, dense, and provides complete coverage of most areas of the cap, with grass and clover predominating. The cap and adjacent area vegetation were mowed in the Fall of 2012. No encroachment of wetland species on the cap was seen. It is recommended that future mowing of the cap continue to include mowing of the field area adjacent to the cap to prevent encroachment of woody and wetland species on the cap.

1.2 Access Road Inspection.

The access road from the entry gate to the cap is in good condition (Photo 2,3), however vegetation has established within the gravel surface, and in the summer months is overgrown. There are no ruts, potholes, or eroded areas. Herbicide should be applied as part of annual maintenance.

1.3 Security Fence Inspection

The security perimeter fence is in good condition. There was a large tree observed leaning on the southeastern section of the fence which should be removed, however at this time it is not affecting the function of the fence. Otherwise, there were no sagging or leaning fence sections noted, and the main gate is operating normally. In general, trees should periodically be cleared from fence area as they naturally grow or fall onto the fence.



2.0 DRAINAGE SYSTEM

The drainage system functions in conjunction with the landfill cap to facilitate the drainage of surface water and infiltrated water off the cap. The drainage system consists of the following components: geocomposite drainage layer, perimeter stone drain along the toe-of-slope, perimeter drainage channels, and a riprap lined outlet area (located at the northeast corner of the landfill (Photo 4)). The A7 landfill inspection drawing is presented in Figure 1.

The Sudbury Training Annex Landfill Drainage System at Area A7 was inspected on December 4, 2012 by personnel from the U.S. Army Corps of Engineers, New England District (NAE). No maintenance activities were performed during these inspections. Observations were made regarding the vegetative cover, vegetation types, erosion, and general condition of the drainage system. Appendix A of this report contains the Inspection and Maintenance checklists which summarize the findings of this inspection. A narrative of the findings of these inspections follows.

The cap drainage system is in good condition. Drainage channels are free of sediment and debris, however an herbicide should be applied to the riprap areas to eliminate unwanted vegetation which has become established (Photo 5). All other areas of the drainage channels are free of unwanted vegetation. The Grass on drainage channel bottoms is in excellent condition. The vegetation on the side slopes is healthy and dense (Photo 6).

The toe drain appears to be functioning properly, and there are no associated slope stability or erosion problems at this time. Toe drains should be cleared of moss growth and other debris which is accumulating on the geotextile covering the drainage stone (Photo 7). The toe drain should continue to be monitored for vegetative growth in the future, and the growth should be periodically removed to maintain the proper operation of the toe drain.

3.0 GAS VENT SYSTEM

A passive gas venting system was installed to facilitate the ventilation of any methane generated from the degrading waste material beneath the landfill cover system. The passive system consists of four 6-inch diameter gas vents (Photo 8).

The gas monitoring activities were performed on December 4, 2012 by personnel from the U.S. Army Corps of Engineers, New England District (NAE) and were consistent with historic monitoring results. Appendix A of this report contains the Landfill Gas Monitoring Table, which summarizes the findings of these inspections. A narrative of the findings of these inspections follows.

The gas vent system is in good condition. All vent pipes and bird screens are intact and functioning as intended except for minor deficiencies at V-1 and V-2, which require new bird screens. Gas monitoring activity at the gas vents resulted in zero readings during the inspection for methane, LEL, and VOC's and low levels of CO2. Oxygen levels varied between 17.7% and



19.5%. The results are presented in the Table in Appendix A. A Landtec GEM 2000 landfill gas monitor was used to monitor the gas vents for methane, carbon dioxide, oxygen, and LEL. A MultiRAE+ was used to check VOC levels.

4.0 CORRECTIVE ACTION

The drainage system and gas vent monitoring system were in good condition. The toe drain geotextile should be cleared of moss and other debris in the near future. The hose clamp and bird screen should be replaced in the near future at V-1 and V-2. The tree leaning on the southeast section of the perimeter fence should be removed. All branches on the perimeter fence should be cleared during annual maintenance. An herbicide should be used on the access road, parking lot, and riprap areas where unwanted vegetation has appeared. It is also recommended that the mowing of the cap continue to include mowing of the adjacent fields. Mowing will not take place until late August when ground-nesting songbirds are mature enough to avoid being harmed.



FIGURE





PHOTOGRAPH LOG



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- Picture 4 Looking South Along Northeastern Riprap Swale Toward Riprap Outlet Area
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- Picture 7 Looking at Toe Drain Geotextile at Southeastern Perimeter Drainage Swale
- Picture 8 Looking Northeast at Gas Vent 3



Picture 1

Picture 2





Picture 4





Picture 5

Picture 6





Picture 7

Picture 8



APPENDIX A

Inspection & Maintenance Check List



Inspection & Maintenance Check List Sudbury Training Annex A7 Landfill

Inspector: Kullberg

Date: 4 December 2012

Item	Description of Inspection Items	Check (X)	Comments
Landfill Cap	Inspect for Eroded Areas	X	No actively eroding areas observed.
	Inspect for Settlement and Ponded Water	X	No settlement or ponded water observed.
	Inspect for Wetland Species Encroachment	X	No encroachment of wetland species observed
	Inspect Vegetated Areas	X	Vegetation healthy and dense with appropriate species growing. Mowed in Fall 12.
Drainage System	Inspect Stone Toe Drain	X	Good condition, appears to be functioning properly, however some sections have moss growth and particulate clogging (See photo 7), and should be cleared. Continue to monitor for clogging, and clear as necessary in the future.
	Inspect for Eroded Areas	X	No erosion noted, no action req'd.
	Inspect Grass in Drainage Channels	X	Channel bottom grass excellent. Side slopes are adequately vegetated.
	Inspect for Debris & Unwanted Vegetation in Drainage Channels	X	No debris or unwanted vegetation observed
	Inspect Rip-Rap Areas	x	Riprap in excellent condition, grass growing in some areas of riprap but no woody species, herbicide should be applied to control vegetation.
Gas Vent System	Inspect Vent Pipe and Bird Screen	X	All vent pipes and bird screens in good condition, except for V-1 and V-2 which both need a new bird screen and hose clamp.



Gas Vent System	Methane Monitoring Vent 1 Vent 2 Vent 3 Vent 4	X	<u>Results</u> Gas monitoring activity at the gas vents resulted in zero readings during the inspection for methane, LEL, and VOC's and low levels of CO2. Oxygen levels varied between 17.7% and 19.5%. See Table below.
Groundwater Monitoring Wells	Inspect Casings and Locks	X	Inspection by others.
Security Fence	Inspect for Damage to or Breeches in	X	Security fence and gates in good condition.
Access Road	Inspect for Erosion, Potholes and Rutting	X	Access road in good condition, no erosion, potholes, or rutting observed; vegetation growing through gravel, apply herbicide.

Description of Maintenance Activities (as necessary):

None.

The following maintenance and monitoring activities are recommended:

- 1. Annual inspections for all components of cap and perimeter. Annual Lawn mowing and clearing of branches from fence line. Clear toe drain geotextile of moss and particulates.
- 2. Herbicide should be applied to all riprap areas and the gravel access road.



APPENDIX B

Landfill Gas Monitoring



Landfill Gas Monitoring Table 2

INSPECTOR: KullbergTITLE: Civil EngineerDATE: 12/4/12

ORGANIZATION: <u>CENAE-EP</u>

WEATHER: Overcast, 45dF, Light Drizzle

BAROMETER: 29.98 in Hg TIME: 1000 BAROMETER 29.9 in Hg TIME: 1200

Vent No.	VOC ppm PID	O ₂ % GEM 2000	LEL % GEM 2000	CO ₂ % GEM 2000	CH4 % GEM 2000	Remarks
V-1	0	19.5	0	2.1	0	No odor, Need new hose clamp and bird screen
V-2	0	19.0	0	2.4	0	No odor, Need new hose clamp and bird screen
V-3	0	18.0	0	4.0	0	No odor
V-4	0	17.7	0	3.2	0	No odor

CALIBRATION INFORMATION: Instrument: <u>MultiRAE+</u> Calibrated by: <u>US Environmental</u> Calibrated With: <u>100 ppm isobutylene (R.F. = 1.0)</u>

Instrument: <u>GEM 2000</u> Calibrated by: <u>US Environmental Rental Co.</u> Calibrated With: <u>15% CH₄, 15% CO₂, 20.9% O₂</u>



GEOTECHNICAL ENGINEERING ANNUAL INSPECTION REPORT FALL 2013

AREA OF CONTAMINATION A7 FORMER SUDBURY TRAINING ANNEX SUDBURY, MASSACHUSETTS

21 November 2013



1.0 INTRODUCTION

The RCRA Subtitle C landfill cap was constructed over the existing landfill at AOC A7 to eliminate the potential risk to human health and the environment associated with exposure to wastes; minimize off-site migration of contaminants; and limit infiltration to the underlying waste within the landfill area, thereby minimizing leachate generation and groundwater degradation. The RCRA cap consists of the following geosynthetic layers: geocomposite gas vent layer, geosynthetic clay liner (GCL), 40 mil linear low density polyethylene (LLDPE) geomembrane, and geocomposite drainage layer. Above the geosynthetic components are 15 inches of drainage sand, 15 inches of filter sand, and 6 inches of vegetative soil (topsoil). The cap was completed in the fall of 1996. The A7 landfill cap inspection drawing is presented in Figure 1.

1.1 Landfill Cap Inspection

Personnel from the U.S. Army Corps of Engineers, New England District (NAE), inspected the Sudbury Training Annex Landfill at Area A7 on November 21, 2013. No maintenance activities were performed during these inspections. Observations were made regarding the vegetative cover, vegetation types, erosion, settlement, and general condition of the various features. Appendix A of this report contains the Inspection and Maintenance checklists and Landfill Gas Summary tables which summarize the findings of these inspections. A narrative of the findings of these inspections follows.

The landfill cap is in excellent condition with no actively eroding areas or settlement (Photo 1). In general, the cap vegetation appears healthy, dense, and provides complete coverage of most areas of the cap, with grass and clover predominating. The cap and adjacent area vegetation were mowed in the Fall of 2013. No encroachment of wetland species on the cap was seen. It is recommended that future mowing of the cap continue to include mowing of the field area adjacent to the cap to prevent encroachment of woody and wetland species on the cap.

1.2 Access Road Inspection.

The access road from the entry gate to the cap is in good condition (Photo 2), however vegetation has established within the gravel surface, and in the summer months is overgrown. There are no ruts, potholes, or eroded areas. Herbicide should be applied as part of annual maintenance.

1.3 Security Fence Inspection

The security perimeter fence is in good condition. There was a large tree observed leaning on the southeastern section of the fence and is bending the fence and could cause it to break. The tree should be removed soon. Additionally, the access gate on the northern central portion of the fence line is leaning and causing a gap in the gate which could facilitate trespassers and possible vandalism (see photo 6). The gate should be fixed or another chain added before the next inspection. Small trees are becoming established along the norther perimeter fence, and should be removed before they damage the fence (see photo 7). Otherwise, there were no sagging or



leaning fence sections noted, and the main gate is operating normally. In general, trees should periodically be cleared from fence area as they naturally grow or fall onto the fence.

2.0 DRAINAGE SYSTEM

The drainage system functions in conjunction with the landfill cap to facilitate the drainage of surface water and infiltrated water off the cap. The drainage system consists of the following components: geocomposite drainage layer, perimeter stone drain along the toe-of-slope, perimeter drainage channels, and a riprap lined outlet area (located at the northeast corner of the landfill (Photo 4)). The A7 landfill inspection drawing is presented in Figure 1.

The Sudbury Training Annex Landfill Drainage System at Area A7 was inspected on November 21, 2013 by personnel from the U.S. Army Corps of Engineers, New England District (NAE). No maintenance activities were performed during these inspections. Observations were made regarding the vegetative cover, vegetation types, erosion, and general condition of the drainage system. Appendix A of this report contains the Inspection and Maintenance checklists which summarize the findings of this inspection. A narrative of the findings of these inspections follows.

The cap drainage system is in good condition. Drainage channels are free of sediment and debris, however an herbicide should be applied to the riprap areas to eliminate unwanted vegetation which has become established (Photo 4). All other areas of the drainage channels are free of unwanted vegetation. The Grass on drainage channel bottoms is in excellent condition. The vegetation on the side slopes is healthy and dense (Photo 5).

The toe drain appears to be functioning properly, and there are no associated slope stability or erosion problems at this time. Toe drains should be cleared of moss growth and other debris which is accumulating on the geotextile covering the drainage stone. The toe drain should continue to be monitored for vegetative growth in the future, and the growth should be periodically removed to maintain the proper operation of the toe drain.

3.0 GAS VENT SYSTEM

A passive gas venting system was installed to facilitate the ventilation of any methane generated from the degrading waste material beneath the landfill cover system. The passive system consists of four 6-inch diameter gas vents.

The gas monitoring activities were performed on November 21, 2013 by personnel from the U.S. Army Corps of Engineers, New England District (NAE) and were consistent with historic monitoring results. Appendix A of this report contains the Landfill Gas Monitoring Table, which summarizes the findings of these inspections. A narrative of the findings of these inspections follows.

The gas vent system is in good condition. All vent pipes are intact and functioning as intended.



All four bird screens and hose clamps require replacement. There were active hornets nests in vents 1, 2 and 4. Only one gas vent was sampled as a result. Gas monitoring activity at gas vent V-3 resulted in a zero reading during the inspection for methane, LEL, and VOC's and a low level of CO2. The oxygen level was 18.8%. The results are presented in the Table in Appendix A. A Landtec GEM 2000 landfill gas monitor was used to monitor the gas vents for methane, carbon dioxide, oxygen, and LEL. A MultiRAE+ was used to check VOC levels.

4.0 CORRECTIVE ACTION

The drainage system and gas vent monitoring system were in good condition. The toe drain geotextile should be cleared of moss and other debris in the near future. The hose clamps and bird screens should be replaced in the near future at all gas vents. The tree leaning on the southeast section of the perimeter fence should be removed before it bends the fence any further. All branches on the perimeter fence should be cleared during annual maintenance. An herbicide should be used on the access road, parking lot, and riprap areas where unwanted vegetation has appeared. It is also recommended that the mowing of the cap continue to include mowing of the adjacent fields. Mowing will not take place until late August when ground-nesting songbirds are mature enough to avoid being harmed.



FIGURE



me



PHOTOGRAPH LOG



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- Picture 2 Looking West Northwest Along Access Road
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- **Picture 4** Looking Northeast At Northwestern Riprap Perimeter Drainage Swale
- Picture 5 Looking East Along Grass Lined Perimeter Drainage Swale
- Picture 6 Looking North at Sagging Access Gate on Northern Perimeter Fence
- Picture 7 Looking North at Trees growing through Perimeter Fence
- **Picture 8-** Looking West along southern perimeter swale



Picture 1

Picture 2





Picture 4





Picture 5

Picture 6



Picture 7



Picture 8



APPENDIX A

Inspection & Maintenance Check List



Inspection & Maintenance Check List Sudbury Training Annex A7 Landfill

Inspector: Kullberg

Date: 21 November 2013

Item	Description of Inspection Items	Check (X)	Comments
Landfill Cap	Inspect for Eroded Areas	X	No actively eroding areas observed.
	Inspect for Settlement and Ponded Water		No settlement or ponded water observed.
	Inspect for Wetland Species Encroachment	X	No encroachment of wetland species observed
	Inspect Vegetated Areas	X	Vegetation healthy and dense with appropriate species growing. Mowed in Fall 13.
Drainage System	Inspect Stone Toe Drain	X	Good condition, appears to be functioning properly, however some sections have moss growth and particulate clogging, and should be cleared. Continue to monitor for clogging, and clear as necessary in the future.
	Inspect for Eroded Areas	X	No erosion noted, no action req'd.
	Inspect Grass in Drainage Channels	X	Channel bottom grass excellent. Side slopes are adequately vegetated.
	Inspect for Debris & Unwanted Vegetation in Drainage Channels	X	No debris or unwanted vegetation observed
	Inspect Rip-Rap Areas	X	Riprap in excellent condition, grass growing in some areas of riprap but no woody species, herbicide should be applied to control vegetation.
Gas Vent System	Inspect Vent Pipe and Bird Screen	X	All vent pipes need new bird screens and hose clamps. Hornets nests were present in V1, 2 and 4


Gas Vent System	Methane Monitoring Vent 1 Vent 2 Vent 3 Vent 4	X	<u>Results</u> Gas monitoring activity at the gas vents resulted in zero readings during the inspection for methane, LEL, and VOC's and low levels of CO2. Oxygen level was 18.8% at V-3. See Table below.
Groundwater Monitoring Wells	Inspect Casings and Locks	X	Inspection by others.
Security Fence	Inspect for Damage to or Breeches in	X	Security fence and gates in good condition. Large tree on southeastern perimeter fence. Small trees growing through fence on northern perimeter. Access gate leaning on northern central perimeter.
Access Road	Inspect for Erosion, Potholes and Rutting	X	Access road in good condition, no erosion, potholes, or rutting observed; vegetation growing through gravel, apply herbicide.

Description of Maintenance Activities (as necessary):

None.

The following maintenance and monitoring activities are recommended:

- 1. Annual inspections for all components of cap and perimeter. Annual Lawn mowing and clearing of branches from fence line. Clear toe drain geotextile of moss and particulates. Clear small trees on northern perimeter. Fix leaning gate. Remove large tree on southeastern perimeter.
- 2. Herbicide should be applied to all riprap areas and the gravel access road.



APPENDIX B

Landfill Gas Monitoring



Landfill Gas Monitoring Table 2

INSPECTOR: Kullberg TITLE: Civil Engineer DATE: 11/21/13

ORGANIZATION: <u>CENAE-EP</u>

WEATHER: Sunny, No wind, 32dF

BAROMETER: <u>30.16 in Hg</u> TIME: <u>0945</u> BAROMETER <u>30.16 in Hg</u> TIME: <u>1130</u>

Vent No.	VOC ppm PID	O ₂ % GEM 2000	LEL % GEM 2000	CO ₂ % GEM 2000	CH4 % GEM 2000	Remarks
V-1	NS	NS	NS	NS	NS	Not sampled due to Hornets Nest – New Screen Needed
V-2	NS	NS	NS	NS	NS	Not sampled due to Hornets Nest – New Screen Needed
V-3	0	18.8	0	2.1	0	No odor
V-4	NS	NS	NS	NS	NS	Not sampled due to Hornets Nest – New Screen Needed

NS – Not Sampled

CALIBRATION INFORMATION: Instrument: <u>MultiRAE+</u> Calibrated by: <u>US Environmental</u> Calibrated With: <u>100 ppm isobutylene (R.F. = 1.0)</u>

Instrument: <u>GEM 2000</u> Calibrated by: <u>US Environmental Rental Co.</u> Calibrated With: <u>15% CH₄, 15% CO₂, 20.9% O₂</u>



GEOTECHNICAL ENGINEERING ANNUAL INSPECTION REPORT FALL 2014

AREA OF CONTAMINATION A7 FORMER SUDBURY TRAINING ANNEX SUDBURY, MASSACHUSETTS

18 November 2014



1.0 INTRODUCTION

The RCRA Subtitle C landfill cap was constructed over the existing landfill at AOC A7 to eliminate the potential risk to human health and the environment associated with exposure to wastes; minimize off-site migration of contaminants; and limit infiltration to the underlying waste within the landfill area, thereby minimizing leachate generation and groundwater degradation. The RCRA cap consists of the following geosynthetic layers: geocomposite gas vent layer, geosynthetic clay liner (GCL), 40 mil linear low density polyethylene (LLDPE) geomembrane, and geocomposite drainage layer. Above the geosynthetic components are 15 inches of drainage sand, 15 inches of filter sand, and 6 inches of vegetative soil (topsoil). The cap was completed in the fall of 1996. The A7 landfill cap inspection drawing is presented in Figure 1.

1.1 Landfill Cap Inspection

Personnel from the U.S. Army Corps of Engineers, New England District (NAE), inspected the Sudbury Training Annex Landfill at Area A7 on November 18, 2014. No maintenance activities were performed during these inspections. Observations were made regarding the vegetative cover, vegetation types, erosion, settlement, and general condition of the various features. Appendix A of this report contains the Inspection and Maintenance checklists and Landfill Gas Summary tables which summarize the findings of these inspections. A narrative of the findings of these inspections follows.

The landfill cap is in excellent condition with no actively eroding areas or settlement (Photo 1). In general, the cap vegetation appears healthy, dense, and provides complete coverage of most areas of the cap, with grass and clover predominating. The cap and adjacent area vegetation were mowed in the Fall of 2014. No encroachment of wetland species on the cap was seen. It is recommended that future mowing of the cap continue to include mowing of the field area adjacent to the cap to prevent encroachment of woody and wetland species on the cap.

1.2 Access Road Inspection.

The access road from the entry gate to the cap is in good condition (Photo 2), however vegetation has established within the gravel surface, and in the summer months is overgrown. There are no ruts, potholes, or eroded areas. Herbicide should be applied as part of annual maintenance.

1.3 Security Fence Inspection

The security perimeter fence is in good condition. There was a large tree observed leaning on the southeastern section of the fence and is bending the fence and could cause it to break. The tree should be removed soon. Additionally, the access gate on the northern central portion of the fence line is leaning and causing a gap in the gate which could facilitate trespassers and possible vandalism (see photo 6). The gate should be fixed or another chain added before the next inspection. Small trees are becoming established along the northern perimeter fence, and should be removed before they damage the fence (see photo 7). Otherwise, there were no sagging or



leaning fence sections noted, and the main gate is operating normally. In general, trees should periodically be cleared from fence area as they naturally grow or fall onto the fence.

2.0 DRAINAGE SYSTEM

The drainage system functions in conjunction with the landfill cap to facilitate the drainage of surface water and infiltrated water off the cap. The drainage system consists of the following components: geocomposite drainage layer, perimeter stone drain along the toe-of-slope, perimeter drainage channels, and a riprap lined outlet area (located at the northeast corner of the landfill (Photo 4)). The A7 landfill inspection drawing is presented in Figure 1.

The Sudbury Training Annex Landfill Drainage System at Area A7 was inspected on November 21, 2013 by personnel from the U.S. Army Corps of Engineers, New England District (NAE). No maintenance activities were performed during these inspections. Observations were made regarding the vegetative cover, vegetation types, erosion, and general condition of the drainage system. Appendix A of this report contains the Inspection and Maintenance checklists which summarize the findings of this inspection. A narrative of the findings of these inspections follows.

The cap drainage system is in good condition. Drainage channels are free of sediment and debris, however an herbicide should be applied to the riprap areas to eliminate unwanted vegetation which has become established (Photo 4). All other areas of the drainage channels are free of unwanted vegetation. The Grass on drainage channel bottoms is in excellent condition. The vegetation on the side slopes is healthy and dense (Photo 5).

The toe drain appears to be functioning properly, and there are no associated slope stability or erosion problems at this time. Toe drains should be cleared of moss growth and other debris which is accumulating on the geotextile covering the drainage stone. The toe drain should continue to be monitored for vegetative growth in the future, and the growth should be periodically removed to maintain the proper operation of the toe drain.

3.0 GAS VENT SYSTEM

A passive gas venting system was installed to facilitate the ventilation of any methane generated from the degrading waste material beneath the landfill cover system. The passive system consists of four 6-inch diameter gas vents.

The gas monitoring activities were performed on November 21, 2014 by personnel from the U.S. Army Corps of Engineers, New England District (NAE) and were consistent with historic monitoring results. Appendix A of this report contains the Landfill Gas Monitoring Table, which summarizes the findings of these inspections. A narrative of the findings of these inspections follows.

The gas vent system is in good condition. All vent pipes are intact and functioning as intended.



All four bird screens and hose clamps require replacement. There were active hornets nests in vents 1, 2 and 4. Only one gas vent was sampled as a result. Gas monitoring activity at gas vent V-3 resulted in a zero reading during the inspection for methane, LEL, and VOC's and a low level of CO2. The oxygen level was 18.8%. The results are presented in the Table in Appendix A. A Landtec GEM 2000 landfill gas monitor was used to monitor the gas vents for methane, carbon dioxide, oxygen, and LEL. A MultiRAE+ was used to check VOC levels.

4.0 CORRECTIVE ACTION

The drainage system and gas vent monitoring system were in good condition. The toe drain geotextile should be cleared of moss and other debris in the near future. The hose clamps and bird screens should be replaced in the near future at all gas vents. The tree leaning on the southeast section of the perimeter fence should be removed before it bends the fence any further. All branches on the perimeter fence should be cleared during annual maintenance. An herbicide should be used on the access road, parking lot, and riprap areas where unwanted vegetation has appeared. It is also recommended that the mowing of the cap continue to include mowing of the adjacent fields. Mowing will not take place until late August when ground-nesting songbirds are mature enough to avoid being harmed.



FIGURE



no



PHOTOGRAPH LOG



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- Picture 2 Looking West Northwest Along Access Road
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- **Picture 4** Looking West Along Northern Perimeter Drainage Swale
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- Picture 6 Looking North at Sagging Access Gate on Northern Perimeter Fence
- Picture 7 Looking North at Trees growing through Perimeter Fence
- Picture 8- Looking West along southern perimeter swale



Picture 1

Picture 2



Picture 3

Picture 4





Picture 5

Picture 6



Picture 7



Picture 8



APPENDIX A

Inspection & Maintenance Check List



Inspection & Maintenance Check List Sudbury Training Annex A7 Landfill

Inspector: Kullberg

Date: 18 November 2014

Item	Description of Inspection Items	Check (X)	Comments
Landfill Cap	Inspect for Eroded Areas	X	No actively eroding areas observed.
	Inspect for Settlement and Ponded Water	X	No settlement or ponded water observed.
	Inspect for Wetland Species Encroachment	X	No encroachment of wetland species observed
	Inspect Vegetated Areas	X	Vegetation healthy and dense with appropriate species growing. Mowed in Fall 14.
Drainage System	Inspect Stone Toe Drain	X	Good condition, appears to be functioning properly, however some sections have moss growth and particulate clogging, and should be cleared. Continue to monitor for clogging, and clear as necessary in the future.
	Inspect for Eroded Areas	X	No erosion noted, no action req'd.
	Inspect Grass in Drainage Channels	X	Channel bottom grass excellent. Side slopes are adequately vegetated.
	Inspect for Debris & Unwanted Vegetation in Drainage Channels	X	No debris or unwanted vegetation observed
	Inspect Rip-Rap Areas	X	Riprap in excellent condition, grass growing in some areas of riprap but no woody species, herbicide should be applied to control vegetation.
Gas Vent System	Inspect Vent Pipe and Bird Screen	X	All vent pipes need new bird screens and hose clamps. Hornets nests were present in V1, 2 and 4



Gas Vent System	Methane Monitoring Vent 1 Vent 2 Vent 3 Vent 4	X	<u>Results</u> Gas monitoring activity at the gas vents resulted in zero readings during the inspection for methane, LEL, and VOC's and low levels of CO2. Oxygen level was 19.8% at V-3. See Table below.
Groundwater Monitoring Wells	Inspect Casings and Locks	X	Inspection by others.
Security Fence	Inspect for Damage to or Breeches in	X	Security fence and gates in good condition. Large tree on southeastern perimeter fence. Small trees growing through fence on northern perimeter. Access gate leaning on northern central perimeter.
Access Road	Inspect for Erosion, Potholes and Rutting	X	Access road in good condition, no erosion, potholes, or rutting observed; vegetation growing through gravel, apply herbicide.

Description of Maintenance Activities (as necessary):

None.

The following maintenance and monitoring activities are recommended:

- 1. Annual inspections for all components of cap and perimeter. Annual Lawn mowing and clearing of branches from fence line. Clear toe drain geotextile of moss and particulates. Clear small trees on northern perimeter. Fix leaning gate. Remove large tree on southeastern perimeter.
- 2. Herbicide should be applied to all riprap areas and the gravel access road.



APPENDIX B

Landfill Gas Monitoring



Landfill Gas Monitoring Table 2

INSPECTOR: Kullberg TITLE: Civil Engineer DATE: 11/18/14

ORGANIZATION: <u>CENAE-EP</u>

WEATHER: Sunny, No wind, 32dF

BAROMETER: 29.47 in Hg TIME: 1000 BAROMETER 29.47 in Hg TIME: 1200

Vent No.	VOC ppm PID	O ₂ % GEM 2000	LEL % GEM 2000	CO ₂ % GEM 2000	CH4 % GEM 2000	Remarks
V-1	NS	NS	NS	NS	NS	Not sampled due to Hornets Nest – New Screen Needed
V-2	NS	NS	NS	NS	NS	Not sampled due to Hornets Nest – New Screen Needed
V-3	0	18.8	0	2.1	0	No odor
V-4	0	20.0	0	0	0	No Odor – New Screen Needed

NS – Not Sampled

CALIBRATION INFORMATION: Instrument: <u>MultiRAE+</u> Calibrated by: <u>US Environmental</u> Calibrated With: <u>100 ppm isobutylene (R.F. = 1.0)</u>

Instrument: <u>GEM 2000</u> Calibrated by: <u>US Environmental Rental Co.</u> Calibrated With: <u>15% CH₄, 15% CO₂, 20.9% O₂</u>



GEOTECHNICAL ENGINEERING ANNUAL INSPECTION REPORT FALL 2015

AREA OF CONTAMINATION A7 FORMER SUDBURY TRAINING ANNEX SUDBURY, MASSACHUSETTS

18 November 2015



1.0 INTRODUCTION

The RCRA Subtitle C landfill cap was constructed over the existing landfill at AOC A7 to eliminate the potential risk to human health and the environment associated with exposure to wastes; minimize off-site migration of contaminants; and limit infiltration to the underlying waste within the landfill area, thereby minimizing leachate generation and groundwater degradation. The RCRA cap consists of the following geosynthetic layers: geocomposite gas vent layer, geosynthetic clay liner (GCL), 40 mil linear low density polyethylene (LLDPE) geomembrane, and geocomposite drainage layer. Above the geosynthetic components are 15 inches of drainage sand, 15 inches of filter sand, and 6 inches of vegetative soil (topsoil). The cap was completed in the fall of 1996. The A7 landfill cap inspection drawing is presented in Figure 1.

1.1 Landfill Cap Inspection

Personnel from the U.S. Army Corps of Engineers, New England District (NAE), inspected the Sudbury Training Annex Landfill at Area A7 on November 18, 2015. No maintenance activities were performed during these inspections. Observations were made regarding the vegetative cover, vegetation types, erosion, settlement, and general condition of the various features. Appendix A of this report contains the Inspection and Maintenance checklists and Landfill Gas Summary tables which summarize the findings of these inspections. A narrative of the findings of these inspections follows.

The landfill cap is in excellent condition with no actively eroding areas or settlement (Photo 1). In general, the cap vegetation appears healthy, dense, and provides complete coverage of most areas of the cap, with grass and clover predominating. The cap and adjacent area vegetation were mowed in the Fall of 2015. No encroachment of wetland species on the cap was seen. It is recommended that future mowing of the cap continue to include mowing of the field area adjacent to the cap to prevent encroachment of woody and wetland species on the cap.

1.2 Access Road Inspection.

The access road from the entry gate to the cap is in good condition (Photo 2), however vegetation has established within the gravel surface, and in is overgrown. There are no ruts, potholes, or eroded areas. Herbicide should be applied as part of annual maintenance.

1.3 Security Fence Inspection

The security perimeter fence is in good condition. There was a large tree observed leaning on the southeastern section of the fence and is bending the fence and could cause it to break. The tree should be removed soon. Additionally, the access gate on the northern central portion of the fence line is leaning and causing a gap in the gate which could facilitate trespassers and possible vandalism (see photo 6). The gate should be fixed or another chain added before the next inspection. Small trees are becoming established along the northern perimeter fence, and should be removed before they damage the fence (see photo 5). Otherwise, there were no sagging or leaning fence sections noted, and the main gate is operating normally. In general, trees should



periodically be cleared from fence area as they naturally grow or fall onto the fence.

2.0 DRAINAGE SYSTEM

The drainage system functions in conjunction with the landfill cap to facilitate the drainage of surface water and infiltrated water off the cap. The drainage system consists of the following components: geocomposite drainage layer, perimeter stone drain along the toe-of-slope, perimeter drainage channels, and a riprap lined outlet area (located at the northeast corner of the landfill (Photo 3). The A7 landfill inspection drawing is presented in Figure 1.

The Sudbury Training Annex Landfill Drainage System at Area A7 was inspected on November 18, 2015 by personnel from the U.S. Army Corps of Engineers, New England District (NAE). No maintenance activities were performed during these inspections. Observations were made regarding the vegetative cover, vegetation types, erosion, and general condition of the drainage system. Appendix A of this report contains the Inspection and Maintenance checklists which summarize the findings of this inspection. A narrative of the findings of these inspections follows.

The cap drainage system is in good condition. Drainage channels are free of sediment and debris, however an herbicide should be applied to the riprap areas to eliminate unwanted vegetation which has become established. All other areas of the drainage channels are free of unwanted vegetation. The Grass on drainage channel bottoms is in excellent condition. The vegetation on the side slopes is healthy and dense (Photo 4).

The toe drain appears to be functioning properly, and there are no associated slope stability or erosion problems at this time. Toe drains should be cleared of moss growth and other debris which is accumulating on the geotextile covering the drainage stone. It appears that during mowing the geotextile layer was ripped on the northeast slope. Toe drain appears to be working properly. Monitor the area for loss of drainage stone. The toe drain should continue to be monitored for vegetative growth in the future, and the growth should be periodically removed to maintain the proper operation of the toe drain.

3.0 GAS VENT SYSTEM

A passive gas venting system was installed to facilitate the ventilation of any methane generated from the degrading waste material beneath the landfill cover system. The passive system consists of four 6-inch diameter gas vents.

The gas monitoring activities were performed on November 18, 2015 by personnel from the U.S. Army Corps of Engineers, New England District (NAE) and were consistent with historic monitoring results. Appendix A of this report contains the Landfill Gas Monitoring Table, which summarizes the findings of these inspections. A narrative of the findings of these inspections follows.

The gas vent system is in good condition. All vent pipes are intact and functioning as intended.



All four bird screens and hose clamps require replacement. There were active hornets nests in vent 1 and was sampled as a result. Gas monitoring activity at gas vent V-2, 3, and 4 resulted in 0.1% reading during the inspection for methane, 0.002% LEL, 0.5-1.0PPM VOC's and a low level of 1.4-2.9% level of CO2. The oxygen level ranged from 17.2% - 19.6%. The results are presented in the Table in Appendix A. A Landtec GEM 2000 landfill gas monitor was used to monitor the gas vents for methane, carbon dioxide, oxygen, and LEL. A MultiRAE+ was used to check VOC levels.

4.0 CORRECTIVE ACTION

The drainage system and gas vent monitoring system were in good condition. The toe drain geotextile should be cleared of moss and other debris in the near future. The hose clamps and bird screens should be replaced in the near future at all gas vents. The trees leaning on the perimeter fence should be removed before it bends the fence any further. All branches on the perimeter fence should be cleared during annual maintenance. An herbicide should be used on the access road, parking lot, and riprap areas where unwanted vegetation has appeared. It is also recommended that the mowing of the cap continue to include mowing of the adjacent fields. Mowing will not take place until late August when ground-nesting songbirds are mature enough to avoid being harmed.



FIGURE





PHOTOGRAPH LOG



Index of Photographs

- Picture 1 Looking North East at Landfill Cap from Parking Area
- Picture 2 Looking West Northeast Along Access Road
- Picture 3 Looking South Along Northeastern Riprap Swale
- Picture 4 Looking East Along Northern Perimeter Drainage Swale
- Picture 5 Looking East Along Perimeter Fence
- Picture 6 Looking North at Sagging Access Gate on Northern Perimeter Fence
- Picture 7 Looking Northeast at Trees growing through Perimeter Fence
- Picture 8- Looking at Ripped Geotextile along the Northeast Slope
- Picture 9- Looking West along the Southern Slope
- Picture 10- Looking East from outside the Perimeter along the Fence





Picture 1

Picture 2



Picture 3



Picture 4







Picture 5

Picture 6



Picture 7



Picture 8





Picture 9

Picture 10



APPENDIX A

Inspection & Maintenance Check List



Inspection & Maintenance Check List Sudbury Training Annex A7 Landfill

Inspector: Gay, Kullberg, Sprague

Date: 18 November 2015

Item	Description of Inspection Items	Check (X)	Comments
Landfill Cap	Inspect for Eroded Areas	Х	No actively eroding areas observed
	Inspect for Settlement and Ponded Water	X	No settlement or ponded water observed
	Inspect for Wetland Species Encroachment	X	No encroachments of wetland species observed.
	Inspect Vegetated Areas	X	Vegetation healthy and dense with appropriate species growing. Mowed Fall 2015.
Drainage System	Inspect Stone Toe Drain	X	Good condition, appears to be functioning properly, however some sections of moss growth and particulate clogging, should be cleared. Continue to monitor for clogging, and clear as necessary. There are areas of ripped geotextile drainage layer.
	Inspect for Eroded Areas	X	No erosion noted, no action required.
	Inspect Grass in Drainage Channels	X	Channel bottom grass excellent. Side slopes are adequately vegetated.
	Inspect for Debris & Unwanted Vegetation in Drainage Channels	X	No debris or unwanted vegetation observed.
	Inspect Rip-Rap Areas	X	Riprap in excellent condition, grass growing in some areas of riprap but no woody species, herbicide should be applied to control vegetation.
Gas Vent System	Inspect Vent Pipe and Bird Screen	X	All vent pipes need new bird screens and hose clamps. Hornet's nests were present in V-1.
Gas Vent System	Methane Monitoring Vent 1 Vent 2 Vent 3 Vent 4	X	<u>Results</u> Gas sampling was conducted for VOC's, O ₂ , LEL, CO ₂ , and CH ₄ . Results can be found in Appendix B.
Groundwater Monitoring Wells	Inspect Casings and Locks	X	Inspected by others.
Security Fence	Inspect for Damage to or Breeches in	X	Security fence was in decent condition. The locks on all gates except for the main gate were rusted shut and could not be opened by USACE. Large trees lean on the fence in multiple



			locations. Small tress growing through the fence on the northern perimeter. Access gate leaning on northern central perimeter.
Access Road	Inspect for Erosion, Potholes and Rutting	X	Access road is covered by vegetation. Vegetation is thick and no erosion, potholes, or rutting is observed.

Description of Maintenance Activities (as necessary):

None.

The following maintenance and monitoring activities are recommended:

- 1. Annual inspections for all components of cap and perimeter. Annual Lawn mowing and clearing of branches from fence line. Clear toe drain geotextile of moss and particulates. Clear small trees on northern perimeter. Fix leaning gate and locks. Remove large tree on perimeter gate.
- 2. Herbicide should be applied to all riprap areas.



APPENDIX B

Landfill Gas Monitoring



Landfill Gas Monitoring Table 2

INSPECTOR: Gay, Kullberg, Sprague TITLE: Civil Engineer DATE: 18 November 2015

ORGANIZATION: <u>CENAE-EP</u>

WEATHER: Sunny 45

BAROMETER: <u>30.43</u> TIME: <u>11:34</u> BAROMETER <u>30.43</u> TIME: <u>12:12</u>

Vent No.	VOC ppm PID	O2 % GEM 2000	LEL % GEM 2000	CO2 % GEM 2000	CH4 % GEM 2000	Remarks
V-1	NS	NS	NS	NS	NS	Hornets present
V-2	0.5	17.2	0.002	2.0	0.1	
V-3	1.0	17.5	0.002	2.9	0.1	
V-4	0.5	19.6	0.002	1.4	0.1	

NS – Not Sampled

CALIBRATION INFORMATION: Instrument: <u>MultiRAE+</u> Calibrated by: <u>US Environmental</u> Calibrated With: <u>100 ppm isobutylene (R.F. = 1.0)</u>

Instrument: <u>GEM 2000</u> Calibrated by: <u>US Environmental Rental Co.</u> Calibrated With: <u>15% CH₄, 15% CO₂, 20.9% O₂</u>



FORT DEVENS SUDBURY TRAINING ANNEX - AOC A7 ARARS FOR EXCAVATION AND OFF-SITE TREATMENT AND DISPOSAL OF LABORATORY WASTE AND CONTAINMENT BY RCRA SUBTITLE C LANDFILL CAP

Requirement	Status	Requirement Synopsis	Action To Be Taken To Attain ARAR				
ACTION-SPECIFIC							
Laboratory Waste - Federal	•		· · · · · · · · · · · · · · · · · · ·				
RCRA - Identification and Listing of Hazardous Waste (40 CFR 261)	Relevant and Appropriate	Establishes definitions for solid and hazardous wastes. Sets forth criteria used to identify hazardous waste and to list particular wastes. Identifies characteristics of a hazardous waste and contains a particular list of hazardous wastes.	Laboratory waste includes soil and debris contaminated by liquid containers. The waste is assumed to be classified as F002 spent solvents.				
RCRA - Land Disposal Restrictions (40 CFR 268)	Relevant and Appropriate	Identifies hazardous wastes that are restricted from land disposal and defines exemptions. Subpart D contains treatment standards for RCRA-listed wastes.	Removal of laboratory waste and associated contaminated soils triggers LDRs. Since the wastes have been classified as F002 spent halogenated solvents, the wastes will be transported off site for treatment and disposal in accordance with the requirements of the LDRs.				
Off-Site Rule (40 CFR §300.440)	Applicable	Requires that hazardous substances, pollutants, or contaminants transferred off site for treatment, storage, or disposal during a CERCLA response action be transferred to a facility operating in compliance with §3004 and §3005 of RCRA and other federal laws and all applicable state requirements.	Laboratory waste material will be transported to a TSDF that is in compliance.				
Laboratory Waste - State							
HWR - Requirements for Generators (310 CMR 30.4000-30.416)	Relevant and Appropriate	Requirements for generators, including accumulation of waste prior to off-site disposal.	Generator requirements will be complied with during excavation and removal of laboratory waste materials.				
HWR - Use and Management of Containers (310 CMR 30.680)	Relevant and Appropriate	Requirements for use and management of containers.	Packing of laboratory waste materials will adhere to these requirements.				
Soil - Federal							
RCRA Subtitle C, Subpart B - General Facility Standards (40 CFR 264.10 - 264.18)	Relevant and Appropriate	General requirements regarding waste analysis, security, training, inspections, and location for any facility that treats, stores, or disposes of hazardous wastes (a TSDF).	Requirements regarding security, training, and inspections will be met.				

Requirement	Status	Requirement Synopsis	Action To Be Taken To Attain ARAR
RCRA Subtitle C, Subpart B - Construction Quality Assurance Program (40 CFR 264, 19)	Relevant and Appropriate	For all surface impoundments, waste piles, and landfill units, this regulation requires that a construction quality assurance (CQA) program be developed and implemented. A written CQA plan must identify the steps that will be used to monitor and document the quality of materials and their installation.	A CQA program will be developed and implemented for the construction of the landfill cap at Area A7.
RCRA Subtitle C, Subpart C - Preparedness and Preparation (40 CFR 264.30 - 264.37)	Relevant and Appropriate	Requirements applicable to the design, operation, equipment, and communications associated with a TSDF, and to arrangements with local response departments.	Since these regulations are primarily intercled for facilities with indoor operations and a landfill cap is being constructed at Area A7, only requirements regarding communications equipment will apply during construction activities.
RCRA Subtitle C, Subpart D - Contingency Plan and Emergency Procedures (40-CFR 264.50 - 264.56)	Relevant and Appropriate	Outlines general requirements for contingency and emergency planning procedures for TSDF operations.	During all remedial action, a contingency plan with emergency procedures will be developed.
RCRA - Subpart N, Landfill Closure and Post-Closure Care (40 CFR 264.310)	Relevant and Appropriate	Final cover at a landfill requires the cover to be designed and constructed to meet certain performance standards. Cover to provide long-term minimization of infiltration. Settling and subsidence must be accommodated. Post-closure use of property must be restricted as necessary to prevent damage to cover. Runoff and runon must be prevented. Protect and maintain surveyed benchmarks. References §264, 117 - 264, 120 for maintenance and monitoring requirements.	Cap design will meet performance standards. Runoff and runon prevention measures will be taken. Surveyed benchmarks will be protected.
RCRA Subdite C, Subpart G - Closure and Post-closure (40 CFR 264.117 - 264.120)	Relevant and Appropriate	Details general requirements for closure and post-closure of hazardous waste facilities, including installation of a ground water monitoring program and beginning a period of 30 years of post closure care. §264.119 requires the placement of deed restrictions.	Because Area A7 is being closed as a landfill, parts of this requirement concerning long-term monitoring and maintenance of the site are relevant and appropriate. Sets a minimum of 30-year post-closure care period. Deed restrictions will be placed restricting the future uses of the site. A post-closure plan will be prepared. The plan will identify monitoring and maintenance activities, and their frequency.
RCRA Subsittle C, Subpart F - Releases from Solid Waste Management Units (40 CFR 264.90 - 264.101)	Relevant and Appropriate	Specifies compliance points and ground water monitoring requirements for TSDFs during active-care and closure-care periods. Corrective action program must be developed if monitoring shows exceedences in limits.	Ground water monitoring will be conducted following the construction of the cap. Corrective action may be taken if monitoring warrants action.
RCRA Proposed Amendments for Landfill Closure (52 FR 8712)	To Be Considered	Provides an option for the application of alternative closure and post- closure requirements based on a consideration of site-specific conditions, including exposure oathways of concerp.	Cap and post-closure monitoring will be designed taking into account exposure pathways of concern.

Requirement	Status	Requirement Synopsis	Action To Be Tuken To Attain ARAR
RCRA - Land Disposal Restrictions (LDRs) (40 CFR 268)	Applicable	Land disposal of a RCRA hazardous waste is restricted without specified treatment. It must be determined that the waste meets the definition of one of the specified restricted wastes and the remedial action must constitute "placement" for the land disposal restrictions to be considered applicable. For each hazardous waste, the LDRs specify that the waste must be treated either by a treatment technology or to a concentration level prior to disposal in a RCRA Subtitle C-permitted facility.	If soil at Areas A7 and A9 fail TCLP testing, soil must be treated before the final disposal. Soils that fail TCLP testing could not be consolidated under the landfill cap at Area A7.
USEPA Guidance: Design and Construction of RCRA/CERCLA Final Covers (EPA/625/4-91/025)	To Be Considered	USEPA guidance that provides technical guidance on the design and construction of RCRA/CERCLA final covers.	Guidance will be considered in the design and construction of the landfill cap at Area A7.
USEPA Guidance: Quality Assurance and Quality Control for Waste Containment Facilities (EPA/600/R-93/182)	To Be Considered	USEPA guidance that provides technical guidance on quality assurance and quality control measures for containment facilities.	A construction quality assurance program will be developed for the remedial action at Area A7 based on this guidance document.
Clean Water Act: Final NPDES General Permits for Storm Water Discharges From Construction Sites; Notice (57 FR 44412-44435)	Relevant and Appropriate	Addresses NPDES permits for construction sites. For construction sites greater than 5 acres, develop and implement storm water pollution prevention plans. Storm water controls include stabilization practices, such as seeding and geotextiles, and structural practices, such as silt fences, swales, sediment traps, basins, etc. Identify maintenance procedures.	During construction, storm water management practices will be implemented.
Soil - State			*
HWR - General Management Standards for All Facilities (310 CMR 30.510)	Relevant and Appropriate	Establishes requirements for operation of facilities including security, inspection, and personnel training.	Requirements regarding security, inspection, and training will be met during and after construction of the landfill cap.
HWR - Contingency Plan, Emergency Procedures, Preparedness, and Prevention (310 . CMR 30.520)	Relevant and Appropriate	Requirements for notification, safety equipment, and spill control for hazardous waste facilities. A facility's contingency plan shall include: procedures to be used following emergency situations and to prevent hazards to public health, safety, or welfare and the environment. Copies of the plan shall be submitted to the local police and fire denattments, bospitals, and emergency tresponse teams.	During the remedial construction, safety and communication equipment will be kept at the site, and local authorities will be familiarized with site operations. Plans will be developed and implemented during site work. Copies of plans will be kept on site.

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Requirement	Seature	Requirement Synopsis	Action To Be Taken To Audin ARAR			
HWR - Landfill Closure and Post- Closure Care (310 CMR 30.633(1) & (2B))	Relevant and Appropriate	Sets forth performance requirements for the closure of a landfill. For closure, the final cover must be designed and constructed to: provide long-term minimization of migration of liquids through the closed landfill; function with minimum maintenance; promote drainage and minimize erosion or abrasion of the cover; and accommodate settling. Post-closure, long-term maintenance, and monitoring requirements from 310 CMR 30.592 apply. Establishes a 30-year post-closure care period (310 CMR 30.590) and ground water monitoring (310 CMR 30.660).	Landfill cap at Area A7 will be designed to meet performance standards for this requirement. Following construction, long-term monitoring and maintenance requirements for the landfill will also apply.			
HWR - Post-Closure (310 CMR 30.591(b) & 30.592(b))	Relevant and Appropriate	Requirement that establishes 30-year period of operations and maintenance for owners and operators of all facilities at which hazardous waste will remain on site after closure.	Requires a minimum of 30 years for post-closure care at Area A7, and at any other site where hazardous waste will remain in place.			
HWR - Land Disposal Restrictions (310 CMR 30.750).	Relevant and Appropriate	Identifies and describes those hazardous wastes which are restricted from land disposal. These regulations also define the timited circumstances where prohibited land disposal is permissible.	If soils from Areas A7 and A9 fail TCLP test, then this requirement, which requires treatment prior to disposal, is applicable. Soil that fails TCLP testing could not be consolidated under the landfill cap as part of the necessary subgrade.			
Massachusens Surface Water Quality Standards (310 CMR 4.00) (see also 57 FR 44426-44427)	Relevant and Appropriate	Massachusetts 401 certification for the Clean Water Act requires additional measures for surface water discharges during construction. Set backs and best management practices (BMPs) are identified and are dependent upon the classification of the receiving water.	During construction, any new discharge outfill pipes will be designed to be set back from the Assabet River. Receiving swales, infiltration trenches or basins, filter media dikes or other BMPs will be prepared with the goal to minimize erosion yet maximize infiltration or otherwise improve water quality prior to discharge.			
Massachusetts Ambient Air Quality Standards (310 CMR 6.00)	Applicable	Establishes the standards and requirements for ambient air quality standards in the Commonwealth. Specifically, Section 6.04(1) provides ambient air quality criteria such as particulate matter standards. The primary ambient air quality standards for particulate matter are: $50 \ \mu g/m^3$ annual ambient air quality standard, attained when the expected annual mean arithmetic concentration is less than or equal to $50 \ \mu g/m^3$; and $150 \ \mu g/m^3$ - maximum 24-hour culteentration, attained when the expected number of days per calendar year with a 24-hour average concentration above $150 \ \mu g/m^3$ is less than or equal to one.	The emissions limits for particulate matter will be managed through engineering controls during construction activities at Area A7.			

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FORT DEVENS SUDBURY TRAINING ANNEX - AOC A9 ARARs FOR CONTAMINATED SOIL EXCAVATION AND CONSOLIDATION AT AOC A7

Requirement	Status	Requirement Synopsis	Action To Be Taken To Attain ARAR			
CHEMICAL-SPECIFIC						
Federal						
Human Health Evaluation Manual (Part B, Development of Risk-based Preliminary Remediation Goals)(OSWER 9285.7-01B)	To Be Considered	USEPA guidance used to develop preliminary remediation goals for carcinogenic and non-carcinogenic contaminants in various media.	Using the guidance, risk-based cleanup levels were developed for arsenic and thallium. Arsenic and thallium contaminated soils at AOC A9 will be excavated to 30 and 20 parts per million, respectively. Confirmatory samples will be taken to ensure that all contaminated soils above the cleanup level are removed.			
		LOCATION SPECIFIC - None.				
	· · ·	ACTION-SPECIFIC				
Federal						
RCRA - Identification and Listing of Hazardous Waste (40 CFR 261)	Applicable	Establishes definitions for solid and hazardous waste. Sets forth criteria used to identify hazardous waste and to list particular wastes. Identifies the characteristics of a hazardous waste and contains a list of particular hazardous wastes.	Soils at Area A9 will be TCLP tested to determine if it is hazardous.			
Preparation of Soil Sampling Protocols: Sampling Techniques and Strategies (EPA/600/R-92/128, July 1992)	To Be Considered	USEPA guidance document for use in the development of soil sampling protocols. A particulate sampling theory is the basis for proper soil sampling. Other soil sampling scenarios are discussed including sampling from stockpiled material.	During remedial design, a soil sampling plan will be developed for implementation during excavation of soil. The goal of the sampling will be to determine whether soil can be consolidated as part of the subgrade of the landfill cap or must be shipped off-site for treatment/disposal.			
State						
HWR - Identification and Listing of Hazardous Waste (310 CMR 30.100)	Applicable	Establishes provisions for classifying waste as regulated hazardous waste. Two methods are employed to identify wastes as hazardous, characteristics and listing.	Soil will be TCLP tested for arsenic to determine if it is hazardous by characteristics.			
Massachusens Air Pollution Control Regulations (310 CMR 6.00)	Applicable	Establishes the standards and requirements for ambient air quality standards in the Commonwealth. Specifically, Section 6.04(1) provides ambient air quality criteria such as particulate matter standards. The primary ambient air quality standards for particulate matter are: $50\mu g/m^3$ annual ambient air quality standard, attained when the expected annual mean arithmetic concentration is less than or equal to $50\mu g/m^3$; and $150\mu g/m^3$ - maximum 24-hour concentration, attained when the expected number of days pet catendar year with a 24-hour average concentration above $150\mu g/m^3$ is less than or equal to one.	If necessary, emissions limits for particulate matter will be managed through engineering controls during excavation activities at all sites.			





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Details of the transfer documents to three Federal agencies are included in the pages that follow. Documents reproduced here include:

USFWS:

Memorandum of Agreement between the United States Army and the United States Fish and Wildlife Service for the Transfer of Military Property, 28 September 2000

USAF:

Transfer Agreement between the Department of the Army and the Department of the Air Force for a Portion of the Former Fort Devens, Massachusetts 3 June 2002

Notary Public affidavit 3 June 2002 regarding the Army signatory

FEMA:

Modification to Memorandum of Agreement between the Department of the Army and the Federal Emergency Management Agency for the Transfer of Real Property at the Sudbury Training Annex, Massachusetts, signed 3 July 2003 by Joseph W. Whitaker for the Department of the Army and 29 July 2003 by Michael D. Brown for the Federal Emergency Management Agency.

Letter of Transfer for a Portion of the Former Fort Devens, Massachusetts to the Federal Emergency Management Agency, March 31, 2003; Memorandum of Agreement between the Department of the Army and the Federal Emergency Management Agency for the Transfer of Real Property at the Sudbury Training Annex, Massachusetts, March 21, 2003

Notary Public affidavit 21 March 2003 regarding the Army signatory Notary Public affidavit 31 March 2003 regarding the FEMA signatory



MEMORANDUM OF AGREEMENT BETWEEN THE UNITED STATES ARMY AND THE UNITED STATES FISH AND WILDLIFE SERVICE FOR THE TRANSFER OF MILITARY PROPERTY

The United States Fish and Wildlife Service (FWS) and the United States Army (the Army) hereby enter into a Memorandum of Agreement (MOA) to clarify responsibilities and requirements of both parties pursuant to the transfer of real property a the Devens Reserve Forces Training Area (Devens RFTA), Sudbury Training Annex, Massachusetts, from the Army to the FWS. The authority to enter into this MOA is Defense Base Realignment and Closure (BRAC) Act of 1990, Public Law 101-510, 10 U.S.C. 2687 note and 16 U.S.C. 667b.

A. INTRODUCTION

Fort Devens, Massachusetts closed on 31 March 1996. The Devens RFTA was established on April 1 1996. The property to be transferred to the 1 WS is part of the Devens RFTA. The Army will transfer as excess property a parcel of approximitely 2,205.2 acres to the FWS, which intends to use it as a National Wildlife Refuge. The boundaries of the property, hereinafter referred to as the Transfer Parcel or the Parcel (remaining BRAC barcels less 27(7) PS and 39(4) PS/PR) are identified in the official survey and legal description date 25 September 1997 and 24 April 1997. Copies of these documents are on file with the U.S. Army Corps of Engineers, New England District, Concord, Massachusetts.

The FWS has requested transfer of the Parcel is excess Federal property, pursuant to the Federal Property and Administrative Services Act of 1 49 (FPASA), 40 U.S.C. Sections 471-544 and 16 U.S.C. Section 667b for inclusion in the National Wildlife Refuge System based upon the FWS's determination that the Parcel has particular value in the execution of the national migratory bird management program. Both parties agree that the transfer of this property includes specific responsibilities and requirements as outlined in this MOA.

B. GENERAL TERMS AND CONDITIONS

1. The FWS acceptance of the Transfer Parcel, the buildings located on the Parcel and fixed equipment is at no cost to the FWS.

2. No provisions of this agreement shall be interpreted or applied so as to obligate the FWS or the Army in excess or advance of appropriations or otherwise so as to result in a violation of the Anti-Deficiency Act, 31 U.S.C. Section 13-1.

EXHIBIT B



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NVIRONMENTAL COMPLIANCE RESPONSIBILITIES

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1. Both the Army and the FWS acknowledge that the Sudbury Training Annex is a National Priorities List (NPL) site under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, as amended. Sudbury Training Annex has been on the NPL since February 1990. Since that time, the CEI CLA- regulated environmental investigations have been underway, and in August 1996, reme ial actions to effect environmental cleanup and restoration began. The Transfer Parcel contains 4 Study Areas (SA) of potential environmental contamination. Of the 74 SAs, 62 have No Forther Action Decision Documents (NFADDs) signed, 6 have No Further CERCLA Action Report Of Decision (ROD) signed, 4 have a Source Control ROD and/or Management Of Migration ROD signed, 1 is pending a Removal Action and 1 is pending sampling/analysis results. The Army agrees to provide the FWS copies of all work plans and reports relating to pending actions at SA's P27 and P58 at the same time said plans and reports are provided to Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Hotection (MDEP)

The Army shall provide the FWS with a copy of the Sudbury Training Annex Federal Facility Agreement (FFA) entered into by the United states EPA Region 1 and the Army on 13 May 1991, and made effective on 15 November 19 1. The Army agrees to provide the FWS with prompt Notice of the initiation of any negotiations to amend the FFA. The Army agrees to provide the FWS with any future amendments to the FFA within 30 days of execution of such amendments. The FWS agrees to take no action inconsistent with the terms of the FFA. The environmental remediation of the Sudbury Training Annex National Priority List (NPL) Site is being undertaken by the Army in accordance with the FFA negotiated with the EPA and in cooperation with MDEP. The Army and FW agree that, should a conflict arise between the terms of the FFA as it presently exists or may is amended, and the provisions of this MOA, the terms of the FFA will take precedence over the provisions of this MOA. The Army will inform the FWS of any such conflicts affecting the FV S use of the Transfer Parcel. The Army reserves the right to access the premises as it deems nec ssary to fulfill its responsibilities under the FFA, the Army's Installation Restoration Program and this MOA.

2. Except as specifically provided for herein, the FWS does not assume any of the United States Government's present or future potential lia ility or responsibility for hazardous materials, hazardous substances, hazardous wastes, petroleum or any other contamination existing on or emanating from the Transfer Parcel, attributable to the Army's activities, on the date the Parcel is transferred to the FWS (hereinafter referrence to as the Date of Transfer). In addition, except as specifically provided herein, the FWS does not assume, and shall not have after the Date of Transfer, any obligation to undertake the United States Government's defense or payment of any claim or action, whether in existence now or prought in the future, caused by or arising out of the use, storage, management, release, or lisposal of any hazardous material, hazardous substance, hazardous waste, petroleum product or derivative or any other contaminant (including any use, storage, management, release, or disposal of such that occurs during any subsequent environmental remediation) on any portion of the Transfer Parcel prior to the Date of Transfer, including hazardous material, hazardous substance, hazardous waste, petroleum or any other contamination not presently known but subsequently discovered and determined to be attributable to activities or conditions on the farcel prior to the Date of Transfer.

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3. With respect to hazardous material, hazardous substance, hazardous waste, petroleum or any other contamination existing on or emanating from the Transfer Parcel on the Date of Transfer, except as otherwise specifically provided hereit, the Army warrants that it shall comply with and retain all of the United States Government's responsibility and present and potential liability, as required by law and regulation, for funding and implementing actions including, but not limited to, investigations, sampling, testing, cleanup, restoration, maintenance, monitoring, closure, five-year reviews, site inspections, removal actions, remedial actions, corrective actions and any other actions necessary to ensure the protection of turnan health and the environment (all actions to be so funded and implemented hereinafter concertively referred to as Response Actions).

Should a release or threatened release of any hizardous material, hazardous substance, hazardous waste, petroleum derivative or other contaminent, attributable to the Army's activities, occur on the Transfer Parcel after the Date of Transfer, he Army warrants that it shall be responsible for conducting all Response Actions necessary opprotect human health and the environment in accordance with applicable laws and regulations. Except as otherwise specifically provided herein, the FWS has not assumed and shall assume no liability or costs arising out of, or related to, such contamination.

The Army shall not be liable for any claims dising out of or in any way predicated on release of any hazardous substance on the Transfer Farcel occurring after the Date of Transfer where such substance was placed on the Transfer farcel by the FWS, its successors or assigns, its agents, contractors, invitees, or its lessees or sublessees or third parties after the Date of Transfer. This paragraph shall not affect the Army's responsibilities to conduct Response Actions that are required by applicable laws and regulations.

4. The Army hereby reserves an easement and right of access to and over any and all portions of the Transfer Parcel for itself and its officers agents, employees and contractors, for purposes of conducting Response Actions after the fate of Transfer in order to fulfill the Army's environmental responsibilities under this Agreement, the FFA (including Section IX - ACCESS of the FFA), and applicable law. It is the intertion of the Army and the FWS that such easement and right of access shall run with the land. In exercising this easement and right of access, except in case of imminent endangerment to give the FWS or the then record owner of the affected portion(s) of the Transfer Parcel reasonable prior written notice of the Respons Action(s) to be conducted on the Transfer Parcel, and shall use reasonable means, to avoid and or minimize interference with the FWS's or such record owner's use of the Transfer Parcel. Subject to the provisions of this Paragraph, and except as otherwise provided for by law, the FWS, such record owner, and any other person shall have no claim or cause of action against the Army, or any officer, agent, employee or contractor of the Army, for interference with the use of the Transfer Parcel based upon Response Actions taken under this Subsection. •



a. Nothing in this Agreement shall limit or otherwise affect the Army's, EPA's or MDEP's respective rights of access to and over any and all portions of the Transfer Parcel under applicable law for purposes including but not limited to:

(i) conducting oversight activities, including but not limited to investigations, sampling, testing, monitoring, verification of data or information submitted to EPA or MDEP, and/or site inspections, in order to monitor the effectiveness of Response Actions and/or the protectiveness of any remedy which is required by (a) any ROD or amendments thereto, which ROL was approved by the Army and EPA and issued by the Army pur uant to CERCLA or the FFA and the modifications thereto before or after the Date of Transfer, or (b) any decision document approved by MDEP and issued by the Army under applicable state law before or after the Date of Transfer;

(ii) Performing live-year reviews as required by CERCLA, and

(iii) Taking additional Response actions in accordance with applicable law and the FFA.

b. The FWS covenants on behalf of itse and its successors and assigns that the Army and EPA shall have, to and over the Transfe Parcel, those rights of access set forth in Section IX-ACCESS of the FFA in order to effectuate the purposes of the FFA in connection with any Study Area or Area of Contamination (as that term is defined under the FFA), including where the Transfer Parcel itself become a Study Area or Area of Contamination after the Date of Transfer.

c. The Army and EPA and their agents, employees, and contractors shall have access to and over the Transfer Parcel as may be necessary to conduct any Response Action pursuant to CERCLA or the FFA found to be necessary, before or after the Date of Transfer, on the Transfer Parcel or on other property comprising the Sudbury Training Annex NPL site. This reservation includes the right of access p and use of, to the extent permitted by law, any available utilities at reasonable cost to the Army or EPA.

d. In exercising the rights hereunder, the Army and EPA shall give the FWS or its successors or assigns reasonable prior written notice of Response Actions taken on the Transfer Parcel under the FFA and shall, to the extent reasonable, consistent with the FFA, and at no additional cost to the United States, endeavor to minimize any disruption to the FWS, or its successors' or assigns', use of the Transfer Parcel.

e. The FWS agrees that notwithstanding my other provision of this Agreement, except as otherwise provided by law, the Army assumes no liability, should implementation of the FFA interfere with the use of the Transfer farcel. Except as otherwise provided by law, the FWS and its successors and assigns shall lave no claim on account of any such interference against the Army or EPA or any officer, agent, employee, or contractor thereof.

f. Prior to the determination by the Army and EPA that all remedial action is complete under CERCLA and the FFA for the Sudbury Taining Annex NPL site, (i) FWS, its successors and assigns shall not undertake activities on the Transfer Parcel that would interfere with or impede the completion of the CERCLA chanup at the Sudbury Training Annex NPL site, and shall give prior written notice to the Army and EPA of any construction, alterations, or similar work on the Transfer Parcel that may interfere with or impede said cleanup, and (ii) the FWS shall comply with any institutional controls established or put in place by the Army relating to the Transfer Parcel which are required by any ROD or amendments thereto, or other applicable land use controls related us the Transfer Parcel, which ROD was approved by the Army and EPA and issued by the Army pursuant to CERCLA or the FFA before or after the Date of Transfer. Additionally, the FWS shall ensure that any leasehold it grants in the Transfer Parcel or any fee interest conveyance of any portion thereof provides for legally binding compliance with the institutional controls required by any such ROD.

g. For any portion of the Transfer Parcel subject to a Response Action under CERCLA or the FFA, prior to the conveyance of an itterest therein, the FWS and its successors and assigns (i) shall include in all conveyance cocuments provisions for allowing the continued operation of any monitoring wells, treatment facilities, or other response activities undertaken pursuant to CERCLA or the FTA on said portion of the Transfer Parcel, and (ii) shall notify the Army and EPA by certified mail at least sixty (60) days prior to any such conveyance of an interest in said property which notice shall include a description of said provisions allowing for the continued operation of any monitoring wells, treatment facilities, or other response activities undertaken pursuant to CERCLA or the FFA.

h. Prior to the determination by the Army and EPA that all remedial action under CERCLA and the FFA is complete for the Sudbury Training Annex NPL site, the FWS and all subsequent grantees or transferees of an increst in any portion of the Transfer Parcel will provide copies of the instrument evidencing such transaction to EPA and the Army by certified mail, within fourteen (14) days after the effective date of such transaction.

i. The FWS and all such subsequent grantees or transferees shall include the provisions of this Subsection C.4 in all subsequent lease, transfer, or conveyance documents related to the Transfer Parcel or any portion thereof that are entered into prior to a determination by the Army and EPA that all remedial action is complete at the Sudbury Training Annex NPL site.

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The FWS acknowledges that arsenic-based herbicides were applied in the vicinity of the fenceine along Patrol Road and on the former rail oad beds on the northern and southern portions of the Sudbury Annex, and that the Army as concluded, after completing a facility-wide investigation, that the resulting concentrations of arsenic in the soil do not pose an unacceptable risk to human health or the environment based on the future land use of the Transfer Parcel as a National Wildlife Refuge. The FWS comparison behalf of itself and its successors and assigns that no portion of a fifty (50) foot strip of land on either side of the center of the abovedescribed fence line or former railroad beds shall be used for residential habitation unless the then-owner of the Transfer Parcel can demonstrate to EPA that such use is consistent with the protection of human health and the environment. The positions of such fence line and former railroad beds will be established by survey. The FWS further covenants that it and its successors and assigns shall include in any deed or other conveyance document transferring any interest in any or all of the Transfer Parcel a restrictive ovenant that identifies the use restriction set forth in this Subsection C.5 to all successors in interest to any interest in any or all of the Transfer Parcel. It is the intention of the FWS and the Army that this use restriction shall run with the land comprising the Transfer Parcel.

6. The FWS acknowledges that prior to the ransfer of the Transfer Parcel to FWS, the Army informed the FWS that it had completed an ordnance and Explosives Survey/Removal Action covering the entire Annex to determine if exclosives or ordnance (OE) existed on the site. The Army represents that no OE was discovered but OE residue was found in Building T405, and was remediated in the fall of 1999. The Arm 's Conclusions of the Final UXO Characterization Report of 18 February 1998 states that: "Unl ss 100 percent of the site is searched, it cannot be positively determined with complete accurace that no OE is present on the site. However, based upon the results of the surface and sub-surface activities and the results of the Site Stats/Grid Stats Random Selection Program, Sudbury annex, Massachusetts, does not show evidence of being contaminated with OE or OE related raterial and can be excessed without further UXO activities except the 18 earth covered magazines. The interiors of these magazines require an inspection prior to being released with the Annex." The FWS acknowledges receipt of a copy of the Conclusions of the Army's Final UXO Characterization Report of 16 February 1998.

a. The FWS acknowledges that the Army has informed it that as of the Date of Transfer, the subsurface soil below the depth of four (4) feet on the Transfer Parcel may contain OE or OE-related material as a result of past Army activities on the Transfer Parcel. The FWS covenants on behalf of itself and its successors and assigns that, except as provided herein, no activity or use shall be undertaken on the Transfer Parcel that might disrupt or otherwise negatively impact the subsurface soil below the depth of four (4) feet. Such prohibited activities and uses shall include any distrbance of the subsurface soil below the depth of four (4) feet in any manner, including but of limited to construction activities such as filling, drilling, excavation or change of topography. The FWS covenants on behalf of itself and its successors and assigns that if it or its successor or assign wants to undertake an activity or use on the Transfer Parcel that will disrup or otherwise negatively impact the subsurface soil below the depth of four (4) feet, including any construction activities involving the disturbance or disruption of the subsurface soil below the depth of four (4) feet, FWS or its T

successor or assign shall pay for all costs associated with the clearance or removal of any OE or OE-related material discovered on the Transfer Parcel below the depth of four (4) feet. FWS further covenants on behalf of itself and its successors and assigns that it and its successors and assigns shall include in any deed or other conveyance document transferring any interest in any or all of the Transfer farcel a restrictive covenant that identifies the use restriction and conditions set forth in this Subsection C.6. It is the intention of the FWS and the Army that this use restriction shall run with the land comprising the Transfer Parcel.

b. The Army covenants to FWS and its successors and assigns that the Army shall provide OE safety assistance at no cost to FWS and its successor or assign, including the clearance or removal of any OE or OE-related mate al discovered on the Transfer Parcel in the course of non-construction activities, including out not limited to landscaping, routine repair and maintenance, security surveys, and other activities not involving the disturbance or disruption of the subsurface soil on the Transfer Parcel below the depth of four (4) feet. The Army also covenants to FWS and its successors and assigns that it shall be responsible for the investigation and clearance or removal of all chemical munitions and all OE refuse sites found on the Transfer Parcel. An OE refuse site is defined as a site where military munitions have been collected and disposed of by b rial and there are ten (10) or more munitions in a cubic yard. FWS covenants on behalf of iself and its successors and assigns that it and its successors and assigns shall include notice of these covenants by the Army in any deed or other conveyance document transferring my interest in any or all of the Transfer Parcel.

7. The Army has completed an Environmerial Baseline Study (EBS) dated 27 January 1997 which characterized the environmental condition of the property. The Army has also completed an Environmental Condition of Property (ECOP) of the Transfer Parcel dated 8 August 2000. The ECOP summarizes what is known about the environmental condition of the Transfer Parcel and reflects the Army's position that the Transfer Parcel is suitable for transfer under the CERFA as a Category 1.3.4.5.& 7 parcel. The Army has complete asbestos and residual Unexploded Ordnance (UXO) cleanup work on the Transfer Parcel identified in the EBS. The Army will provide the FWS with a copy of the EBS and final ECOP.

8. The FWS covenants on behalf of itself and its successors and assigns that, except as provided herein, post-closure use of that portion of the Transfer Parcel that is within the boundaries of Area of Contamination (AOC) A7 (the Old Gravel Pit Landfill) shall not disturb either the integrity of the final covers, liners or any other components of the containment system(s) or the function of the monitoring system(s) in place at that AOC on the Date of Transfer or constructed at that AOC after the Date of Transfer. Post-closure activities prohibited under this Section C.8 shall include but not be limited to:

a. Surface application of water that could a fect the effectiveness of the containment system(s) in preventing infiltration and directing rul off away from landfilled materials, or impact the migration of any contaminated groundwate underlying that portion of the Transfer Parcel that is within the boundaries of AOC A7;

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b. Extraction, consumption, exposure or utilization of groundwater underlying that portion of the Transfer Parcel that is within the boundaries of AOC A7, except for the limited purpose of treating and monitoring groundwater contamination levels in accordance with plans approved by EPA and/or MAD P and issued by the Army, unless the Army determines that such extraction, consumption, exposure or utilization will not have any adverse impacts on any Response Action or Remedy at the Sudbury Training Annex NPL site;

c. Any disturbance of the surface or subsurface of that portion of the Transfer Parcel that is within the boundaries of AOC A7 in any manner, including but not limited to construction, filling, dritling, excavation or change of opography within AOC A7, that might interfere with, negatively impact, or restrict access for any ongoing Response Action within AOC A7 at the Sudbury Training Annex NPL site

d. Any disturbance of the surface or subsirface of that portion of the Transfer Parcel that is within the boundaries of AOC A7 in any manner, including but not limited to construction, filling, drilling, excavation or change of topography within AOC A7, that might interfere with, negatively impact, or jeopardize the protectiveness of any Remedy within AOC A7 at the Sudbury Training Annex NPL site; and

e. Any activity within AOC A7 that will result in disturbance of the mobilization and/or transport of any hazardous substance, hazardous waste, petroleum product or derivative or any other contaminant existing on or emanating from that portion of the Transfer Parcel that is within the boundaries of AOC A7 on the Date of Transfer.

f. If the FWS or any of its successors or assigns proposes an activity that may disturb either the integrity of the final covers. liners or a y other components of the containment system(s) or the function of the monitoring system s) at AOC A7, FWS or such successor or assign shall not undertake such activity unless it first obtains written approval from the Army and EPA. The Army and EPA shall have the discretion to approve a disturbance of the final cover, liners or other component of the dontainment system(s), including any removal of waste, if FWS or such successor or assign demonstrates that such disturbance will not increase the potential threat to human ealth or the environment. Any investigation, remediation, or disposal of hazardous or other waste arising out of a disturbance of the final covers, liners or other component of the containment system(s) at AOC A7 by FWS or such successor or assign shall be the sole responsibility of FWS or such successor or assign. Any request for approval as described above shall be made in writing and delivered to the Army and the Administrator of EPA Region 1.

g. FWS also covenants that it and its successors and assigns shall include in any deed or other conveyance document transferring any increst in any of that portion of the Transfer Parcel that is within the boundaries of AOC A7 restrictive covenant that runs with the land and identifies all the use restrictions and conditions set forth in this Subsection C.8 to all successors to any interest in any or all of the Transfer Parcel. 9. The Army has completed a Record of Environmental Consideration (REC) dated 16 January 1997 for this property transfer and the FWS acknowledges receipt of a copy of that REC.

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10. To the extent not inconsistent with the Army's continuing obligations with respect to environmental remediation, as provided for in Section C of this MOA, the Transfer Parcel, including all buildings, structures and other improvements, are transferred without any representation, warranty, or guaranty by the army as to quality, character, condition, size, kind, or that the same is in condition or fit to be used for the purpose the FWS intends.

11. The Transfer Parcel may include buildings and structures with asbestos containing materials (ACM), lead-based paint and small electrical fixtures with Polychlorinated Biphenyl (PCB). To the extent available, information regarding. CM lead-based paint and PCBs on the property is contained in the EBS. Details of the information gathering process regarding these issues are contained in the EBS. After the Date of Transfer, the FWS will be responsible for any and all remediation of any remaining ACM, lead-based paint and PCB containing electrical fixtures located within structures on the Transfer Parcel.

12. Lands to be transferred to the FWS have been partially surveyed for historic properties. A number of the archeological sites found by these surveys may be eligible for the National Register of Historic Places. As a federal agency, with the responsibility to comply with all federal laws and regulations that govern the treatment of cultural resources, it will be the responsibility of the FWS to complete any accessary historic property inventories for lands it is to receive from the Army and to take interaccount the effects of its undertakings on historic properties discovered there.

D. ARMY SPECIFIC RESPONSIBILITIES

Designate an installation program manager why will be the primary point of contact between the FWS and the Army.

- E. FWS SPECIFIC RESPONSIBILITIES
 - Designate an individual who will be the trimary point of contact between the Army and the FWS.
 - 2. Allow Army access to the Transfer Parcel for completion of any remedial environmental work described in Section C.

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F. NOTIFICATION REQUIREMENTS Any polices to be given pursuant to this MOA shall be addressed to:

U.S. Army: Commander, Devens Reserve Forces Training Area 31 Quebec Street Devens, MA 01432-4424

U.S. Fish & Wildlife Service: Refuge Manager Assabet River National Wildlife Refuge Weir Hill Road Sudbury, MA 01776

G. MODIFICATIONS OR AMENDMENTS

1. This MOA may be modified, amended or erminated by the mutual agreement of both parties, in writing, and signed by a duly authorized representative of the FWS and the Army.

The duly authorized representative of the army is <u>Mr. Paul W. Johnson, Deputy Assistant</u> Secretary of the Army (Installations and Hussing).

The duly authorized representative of the FWS is Regional Director, or his/her designee.

2. This MOA will be reviewed by both parties prior to the beginning of each fiscal year. The MOA will remain in effect unless both parties determine modification or termination is necessary.

3. Both parties to the MOA are required to provide notice to EPA and MDEP of any modifications or amendments to the MOA.

IN WITNESS WHERE OF, each of the parties has executed this MOA effective on the date last signed, the $\frac{2872}{2000}$ day of $\frac{1}{2000}$.

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DEPARTMENT OF THE ARMY

Paul W. Johnson Deputy Assistant Secretary of the Army County/City of Hr Lington Commonweals/State of <u>Hington</u> The foregoing instrument was subscribed and sworn before me this <u>Market are subscribed</u> 2001, by

DEPARTMENT OF THE INTERIOR

Dr. Mamie A. Parker Acting Regional Director U.S. Fish and Wildlife Service, Region 5

Madeni H. Eliming Notary Public

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TRANSFER AGREEMENT BETWEEN THE DEPARTMENT OF THE ARMY AND THE DEPARTMENT OF THE AIR FORCE FOR A PORTION OF THE FORMER FORT DEVENS, MASS CHUSETTS

The Secretary of the Army ("Army"), acting through Joseph W. Whitaker. Deputy Assistant Secretary of the Army (Installations and Housing), does hereby transfer to the Department of the Air Force ("Air Force"), jurisdiction, custody, and control of approximately 4.148 acres, more or less, including all facilities thereupon, of the former Fort Devens, Massachusetts, Sudbury Training Aunex, more specifically described in Exhibit A to this Transfer Agreement (horeinafter called the "Property"), and the interests, rights, easements, and apparter inces, as described and set forth herein, subject to the following terms and conditions:

Article 1 - Authority: This transfer of the Property is made in accordance with Public Law 101-510, section 2905(b)(2)(C), as smended. This transfer is without cost to either the Army or the Air Force. This transfer is also detailed on Department of Defense Form 1354, Exhibit B to this Transfer Agreement, of even date with this Transfer Agreement.

Article 2 - Environment:

2.1 Both the Army and the Air Firce acknowledge that the Property was a National Priorities List (NPL) site under the Comprehensive Environmental Response. Compensation and Liability Act of 1980 as amended, and such property was de-listed on January 29, 2002. The Army has provided the Air Force with a copy of the Sudhury Training Annex Federal Facilities Agreement (FFA) entered into by the United States Environmental Protection Agency Regio 1 and the Army on 13 May 1991, and made effective on 15 November 1991, and the Air Force with any future amendments to the original FFA. The Army agrees to provide the Air Force with any future amendments to the original FFA. The Air Force agrees to the no action on the Property inconsistent with the terms of the FFA. The environmental remediation of the contaminated portions of the Property has been undertaken by the Army in accordance with the FFA and in cooperation with the Massachuseus Department of Environmental Protection. Except in

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regard to property disposal, the Army and the Air Force agree that should a conflict arise between the terms of the FFA as it presently exists or may be amended and the provisions of this Transfer Agreement, the terms of the FFA will take precedence over the provisions of this Transfer Agreement. The Army will inform the Air Force of any such conflicts affecting the Air Force's use of the Property. The Army teserves the right to access the Property, as it deems necessary, to fulfill its responsibilities under the FFA and this Transfer Agreement.

2.2 The Air Force does not assume any of the U.S. Government's liability or responsibility for contamination caused by the Army's use, management, or release of hazardous substances, hazardous waste, or permission products on any portion of Fort. Devens, the Sudbury Annex, or the Property. The Army does not assume any of the U.S. Government's liability or responsibility or contamination caused by the Air Force's use, management, or release of hazardous substances, hazardous substances, hazardous waste, or petroleum products on any portion of the Property. The Army and the Air Force retain, respectively, any and all liability and responsibility for any release of hazardous substances, hazardous waste, or petroleum products on any portion of the Property resulting from its use or management of the Property prior to the effective date of this Transfer Agreement.

2.3 The Army has completed an Environmental Baseline Study (EBS), dated 27 January 1997, which characterized the environmental condition of the Property. The Army has also completed an Environmental Condition of Property (ECOP), dated 1 Feb 2001. The ECOP summarizes what is known about the environmental condition of the **Property and reflects** the Army's position that the Property is suitable for transfer under the Community Environmental Response Pacilitation Act as a Category 4 parcel. The Air Force acknowledges receipt of the EBS and the ECOP.

2.4 The Army has completed a second of Environmental Consideration (REC), dated 16 January 1997, for this wansfer and the Air Force acknowledges receipt of the REC.

2.5 The Property has been particuly inventoried for historic properties. Known archeological sites are present on the Property The Air Force will be responsible for completion of any outstanding historic property inventories for the Property and to take into account the effects of its undertakings on historic properties.

2.6 To the extent not inconsistent with the Army's continuing obligations with respect to environmental remediation, the Property, including all buildings, structures, and other improvements, are transferred without any representation, warranty, or guarantee by the Army as to quality, character, condition, size, kind, or that the same is in condition or fit to be used for the purpore(s) intended by the Air Force.

2.7 The Property may include buildings and structures with asbestos containing materials (ACM), lead-based paint, and PCBs. To the extent available, information regarding ACM, lead-based paint, and SCBs on the property is contained in the EBS. Details of the information gathering process regarding these issues are contained in the EBS. After the effective date of this Transfer Agreement, the Air Force will be responsible for any and all remediation of any remaining ACM, lead based paint, and PCBs on the Property.

Article 3 - Possession and Accountability: Full administrative jurisdiction and control

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for the Property will shift from the Armi to the Air Force as of the date of this Transfer Agreement (its effective date)

Article 4 - Other Terms and Conditions of Transfer:

4.1 No provisions of this agreement shall be interpreted or applied so as to obligate the Army or the Air Force in excess or advance of appropriations or otherwise so as to result in a violation of the Anti-Deficiency Act, 31 U.S.C. § 1341.

4.2 The Air Force will be permitted to use all existing roadways for ingress and egress to the property in accordance with the ingress/egress easement reserved for the Air Force in the transfer of the property by the Army to U.S. Fish and Wildlife Service (USFWS). The same ingress and egress easements are provided in the legal description of the Property at Exhibit A to this Transfer Agreement.

4.3 The Air Force shall continue to reiniburse the Army for utilities until the effective date of this Transfer Agreement. After the transfer, the Air Force shall make its own arrangements for the payment of utilities to the utility providers.

4.4 The Army will not be responsible to provide any services for operation, maintenance, and care of the roadways within and outside the Property or leading to the Property. This includes snow removal, cleaning, maintenance, and repair of the roadways. Since the Army will no longer own the Property, the Air Force will make arrangements with the USFWS for access to the Property as necessary. The Air Force will be responsible for the security, safely, and protection of the Property.

4.5 This Transfer Agreement may be modified or amended by the mutual agreement of both parties in writing and signed by a duly authorized representative of the Army and the Air Force. The duly authorized representative of the Army for this purpose is the Deputy Assistant Secretary of the Army (Installations and Housing) or his/her designee. The duly authorized representative of the Air Force for this purpose is the Deputy Assistant Secretary of the Air Force (Installations) or his/her designee.

Article 5 - Notice:

Any notices to be given pursuant to this Transfer Agreement shall be addressed

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For the Army: Commander, Devens Reserve Forces Training Area 31 Quebec Street Devens, MA 01432-4424

For the Air Force: Air Force Real Estate Agency ATTN: AFREA/DR, Mr. Jon Peerson 112 Luke Ave, Ruom 104 Bolling Air Force Base, D.C. 20 32-8020

or such other address as the parties may, from time to time, direct.

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NOW THEREFORE, in consideration enter into this Transfer Agreement this 3	f the foregoing, the Army and the Air Force Lday of June, 2002.	
FOR THE DEPARTM	NT OF THE ARMY	
By: W.W.W. Joseph W. Whitaker Deputy Assistant Secretary of the Army (Installations and Housing) OASA(I&E)	Date: <u>3 .ton 2002</u>	•
FOR THE DEPARTM	NT OF THE AIR FORCE	•
By: Fred W. Kuhn Deputy Assistant Secretary of the Air Fo (Installations)	Date: <u>"5 RIN 2002</u> re	· · ·
- Exhibits: A - Legal Description		
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COMMONWEALTH OF VIRGINIA) COUNTY OF ARLINGTON ١

I, the undersigned, a Notary Public in and for the Commonwealth of Virginia, County of Arlington, whose Commission as such expires on the _34TA__ day of Norce dec. 2002, do hereby certify that this day personally appeared before me in the Commonwealth of Virginia, dounty of Arlington, Joseph W. Whitaker, whose name is signed to the foregoing document and acknowledged this document is his free act and deed, dated this 3 de dy of _____ _, 200/.²

TARY PUB

MODIFICATION TO MEMORANDUM OF AGREEMENT BETWEEN THE DEPARTMENT OF THE ARMY AND THE FEDERAL EMERGENCY MANAGEMENT AGENCY FOR THE TRANSPER OF REAL PROPERTY AT THE SUDBURY TRAINING ANNEX, MASSACHUSETTS

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WHEREAS, the Department of the Arm (hereinafter "Army"), and the Federal Emergency Management Agency (hereinafter "FEMA"), entered into a Memorandum of Agreement (hereinafter "MOA") dated March 31, 2003 for the transfer of real property at the Sudbury Training Annex, Massachuretts from Army to FEMA; and

WHEREAS, Army and FEMA desire to amend the MOA with respect to certain provisions relating to the property's environmental conditions and compliance responsibilities of the parties.

NOW, THEREFORE, Army and FEMA agree that the MOA is hereby amended as follows:

2. The following text is substituted for the texts of the introductory statement of paragraph 7 and subparagraph 7.a of Section D, ENVIRONMENTAL CONDITION AND COMPLIANCE RESPONSIBILITES:

7. FEMA acknowledges that arsinic-based herbicides were applied in the vicinity of the fence-line along Patrol Road and on the former railroad beds on the northern and southern portions of the S dbury Annex, and that the Army has concluded, after completing a facility-wise investigation, that the resulting concentrations of arsenic in the soil do not pase an unacceptable risk to human health or the environment based on the future and use of the FEMA Parcel for operations (offices, a communication center, storage space and communication antennas) and training (in establishing mobile communications centers in the field).

a. In order to protect human health and the environment and further the common environmental objectives and land use plans of the United States and Massachusetts, a use restriction is needed to assure the fiture use of the property is consistent with the potential soll arsenic environmental condition of the Parcel. This restriction benefits the United States and the public welfare generally and is consistent with state and federal environmental statutes.

I. FEMA covenants on behalf of self and its successors and assigns that no portion of the FEMA Parcel shall be used for either residential habitation or for any

extended use by children under six (6) years of age (including child care or recreation facilities), the FEMA Parcel having been remediated only for general business office operations and training purposes. (Extended use is defined as more than the exposure time of 38 days per year used in the risk assessment for children ages 1-6). FEMA, for itself, its successors or assigns covenar is that it will not undertake nor allow any activity on or use of the property that would violate the restriction contained herein. This restriction and covenant is intended to be binding on FEMA, its successors and assigns; shall run with the land; and are forever enforceable. Nothing contained herein shall preclude FEMA, its successors and assigns, from undertaking, in accordance with applicable laws and regulations and without any cost to the Army, such additional remediation of arsenic in soil necessary to allow for residential or extended use of the Parcel and if the then-owner of the FEMA Parcel can demonstrate to EPA that such use is consistent with the protection of human health and the environment, the United States agrees, without cost, to release or, if appropriate, modify this restriction by an amendment hereto or recordation of an amendment to the deed if transferred from Federal ownership.

ii. The restriction and conditions stated above benefit the public in general and the territory surrounding the FEMA Parcel, including lands retained by the United States, and, therefore, are enforceable by the United States government and EPA. FEMA covenants for itself, its successore, and assigns that it shall include and otherwise make legally binding, the above use restrictions in all subsequent lease, transfer or conveyance documents relating to the Parcel subject hereto. Any successor, assignee, grantee, transferee, lender, employer, agent, lessee or sublessee of FEMA, or any other third party, shall be liable for any costs that result from its violation of this restriction. It is the intention of Army and FEMA that this use restriction shall run with the land comprising the Parcel.

The MOA is amended only as set forth above. All other provisions of the agreement remain in full force and effect.

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IN WITNESS WHEREOF, each of the parties has executed this agreement effective on the date of last signature below.

DEPARTMENT OF THE ARMY

L W.L

JOSEPH W. WHITAKER Deputy Assistant Secretary of the Army (Installations and Housing) OASA (I&E)

2003 Date: __ 39

FEDERAL EMERGENCY MANAGEMENT AGENCY

rown MICHAEL D. BROWN

Under Secretary Emergency Preparedness & Response Department of Homeland Security, on behalf of the Federal Emergency Maragement Agency

JUL 2 9 2003 Date:

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CMMONWEALTH OF VIRGINIA) COUNTY OF ARLINGTON)

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I, the undersigned, a Notary Public in and for the Commonwealth of Virginia, County of Arlington, whose Commission as such expires on the <u>30-16</u> day of <u>November</u>, 2006, do hereby certify that this day personally appeared before me in the Commonwealth of Virginia, County of Arlington, Joseph W. Whitaker, whose name is signed to the foregoing document and acknowledged this document is his free act and deed, dated this <u>3-0</u> day of <u>July</u>, 2003.

ARY PUBLIC



COUNTY OF FAIRFAX COMMONWEALTH OF VIRGINIA

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Sworn and subscribed to before me by Nichael D. Brown, who is to me well known, this 297 day of 3-42, 2001.

Norre

Notary Public My Commission Expires 5/31/05 My Commission Expires:

LETTER OF TRANSFER FOR A PORTION OF THE FORMER FORT DEVENS, MASSACHUSETTS TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY

FROM: The Department of the Army

TO: The Federal Emergency Management Agency

For the Department of the Army ("Army"), I, Joseph W. Whitaker, Deputy Assistant Secretary of the Army (Installations and Housing), do hereby transfer to the Federal Emergency Management Agency ("FEMA"), jurisdiction, custody, and control of approximately 71.525 acres, more or less, of the former Fort Devens, Massachusetts, Sudbury Training Annex, more specifically described in Exhibit A to this Letter of Transfer (hereinafter called the "Property"), and the interests, rights, leases, easements, and appurtenances, as described and set forth herein and the applicable sections of the Memorandum of Agreement ("MOA") between the parties, dated 3-3/-, 2003, attached hereto at Exhibit B to this Letter of Transfer, to be used, operated, maintained, and funded by the FEMA, except as required to be funded by the Army by law or agreement.

Article 1 - Authority: This transfer of the Property is made in accordance with the authority delegated to the Secretary of the Army under the Defense Base Closure and Realignment Act of 1990, Public Law 101-510, 10 U.S.C. 2687, as amended.

Article 2 - Consideration: In accordance with 10 USC § 2687, 16 USC § 667b, and 40 USC §§ 471-531, this transfer of the Property is made without monetary reimbursement from the FEMA.

Article 3 - Possession and Accountability: Full administrative jurisdiction and control for the Property will shift from the Army to the FEMA as of the date of the acceptance of this Letter of Transfer by the FEMA.

Article 4 - Other Terms and Conditions of Transfer: The MOA between the parties, which is hereby incorporated by reference, sets out the general terms and conditions of this transfer, which shall be binding on the parties.

NOW THEREFORE, in consideration of the foregoing, I hereby approve and deliver this Letter of Transfer and cause jurisdiction, custody, and control of the Property described herein to be transferred to the FEMA, effective upon the date of acceptance, as recorded below.

2003 Dated this 21st day of March 2002

DEPARTMENT OF THE ARMY

Bv

Joseph W. Whitaker Deputy Assistant Secretary of the Army (Installations and Housing) OASA(I&E)

Accepted:

The Federal Emergency Management Agency hereby accepts this transfer in accordance with the terms provided for herein:

FEDERAL EMERGENCY MANAGEMENT AGENCY

La LOU -31-03 Date: 3

Michael D. Brown

Its: Acting Under Secretary, Emergency Preparedness & Response Department of Homeland Security, on behalf of the Federal Emergency Management Agency

Exhibits:

A – Property Description

B - Memorandum of Agreement

C - DD Form 1354

COMMONWEALTH OF VIRGINIA) COUNTY OF ARLINGTON)

I, the undersigned, a Notary Public in and for the Commonwealth of Virginia, County of Arlington, whose Commission as such expires on the <u>30+4</u> day of <u>November</u>, 2006, do hereby certify that this day personally appeared before me in the Commonwealth of Virginia, County of Arlington, Joseph W. Whitaker, whose name is signed to the foregoing document and acknowledged this document is his free act and deed, dated this <u>21st</u> day of <u>March</u>, 2003.

THE DISTRICT OF COLUMBIA

Subscribed and sworn to before me by Michael D. Brown, who is to me well known, this ______ day of ______, 2003.

dion TI s

ANDREA WILLIAMS Notary Public, District of Columbia My Commission Expires May 14, 2006

LEGAL DESCRIPTION AND EASEMENT FOR FEDERAL EMERGENCY MANAGEMENT 71.525 ACRES SUDBURY TRAINING ANNEX

MIDDLESEX COUNTY, COMMONWEALTH OF MASSACHUSETTS

The hereinafter described tracts of land are located in the Commonwealth of Massachusetts, Middlesex County, Towns of Maynard, Sudbury, and Stow, situate generally westerly of Cutting Pond, generally northerly of Willis Pond and Hudson Road and generally southeasterly of lands formerly of the Boston and Maine Corporation, being a portion of Fort Devens, Sudbury Training Annex, and being more particularly bounded and described as follows:

All bearings in the following description are referenced to grid north, Massachusetts State Plane Coordinate System (NAD 1983 Mainland Zone).

FEMA PARCELI

BEGINNING at Corner 10373 on the northwesterly boundary of Old Mariborough Road from which Corner 69 of the Sudbury Training Annex Transfer Tract (1) bears N 41° 36' 04'' E, 46.18 feet;

thence from Corner 10373 through the lands now or formerly of Fort Devens, Sudbury Training Annex, partially along the northeasterly boundary of a 50 foot wide access easement the following eight (8) courses:

1) N 49° 59' 03" W, 85.72 feet to Corner 6918;

2) thence N 49° 49' 36" W, 102.66 feet to Corner 10320;

3) thence N 68° 10' 29" W, 118.68 feet to Corner 10319;

4) thence N 73° 00' 09" W, 58.97 feet to Corner 10374, a standard USF&WS aluminum monument, set and marked "COR 10374 1998";

5) thence N 08° 46' 06" W, 698.95 feet continuing through said lands to Corner 10389;

6) thence N 08° 46' 06" W, 618.34 feet to Corner 10390, a standard USF&WS aluminum monument, set and marked "COR 10390 1998";

7) thence N 66° 02' 58" E, 393.72 feet to Corner 10391, a standard USF&WS aluminum monument, set and marked "COR 10391 1998"; and

8) thence N 57° 49′ 26″ W, 134.63 feet to Corner 52, a drill hole in a stone wall found as a witness at its point of intersection with the common division line between the lands of the United States of America on the southwest and the lands now or formerly of Mark I.

and Amy L. Toporoff as described in Book 23591 of Deeds at Page 216, lands now or formerly of Robert and Kerri J. Gorgon as described in Book 23903 of Deeds at Page 483, lands now or formerly of David W. Moss, III and Sharon Moss as described in Book 23603 of Deeds at Page 512, lands now or formerly of Rezaul K. and Fatema A. Khandker as described in Book 22765 of Deeds at Page 484, lands now or formerly of Paula A. and Richard C. Waterhouse as described in Book 24276 at Page 503 and lands now or formerly of James H. and Katherine A. McNulty as described in Book 20368 of Deeds at Page 266 on the northeast with the common division line between the lands of the United States of America on the south and the lands now or formerly of James A. and Mary W. Bulger as described in Book 25602 of Deeds at Page 459 and lands now or formerly of William T. and Linda M. Nachtrab as described in Book 19602 of Deeds at Page 381 on the north:

thence N 82° 36' 44' E, along the above last mentioned common division line, 200.12 feet to Corner 53, a standard USF&WS aluminum monument, set and marked "COR 53, 1996" at its point of intersection with the common division line between the lands of the United States of America on the west and the lands now or formerly of David M. and Sandra R. Manshel as described in Book 20030 of Deeds at Page 567, lands now or formerly of David L. and Christina M. Brooks as described in Book 23502 of Deeds at Page 91, the westerly terminus of Vose Hill Road and lands now or formerly of George E. and Mary Weber Saylor as described in Book 16484 of Deeds at Page 376 on the east;

thence along the above last mentioned common division line the following two (2) courses:

1) thence S 00° 15' 30" E, 254.63 feet to Corner 54, a standard USF&WS aluminum monument, set and marked "COR 54, 1996" and

2) thence S 21° 41′ 53″ W, 50.58 feet to Corner 55 from which a standard Army Corp. of Engineers aluminum monument found as a witness and marked "55", bears N 52° 46′ 11″ E, 9.69 feet at its point of intersection with the common division line between the lands of the United States of America on the south and the lands now or formerly of said George E. and Mary Weber Saylor as described in Book 16484 of Deeds at Page 376, lands now or formerly of James P. and Mary S. Brannelly as described in Book 19138 of Deeds at Page 349, lands now or formerly of James E. and Anita M. Clemens as described in Book 19171 of Deeds at Page 329 and lands now or formerly of Scott A. and Susan F. Bradley as described on Book 19111 of Deeds at Page 290 on the north;

thence along the last mentioned common division line the following four (4) courses:

1) thence from Corner 55 N 83° 50' 30" E, 216.63 feet to Corner 56, from which a standard Army Corp. of Engineers aluminum monument found as a witness and marked "56", bears N 07° 00' 41" W, 5.00 feet;

2) thence from Corner 56, N 82° 08' 09" E, 38.21 feet to Corner 57 from which a standard Army Corp. of Engineers aluminum monument found as a witness and marked "57", bears N 05° 58' 21" W, 5.00 feet;

3) thence from Corner 57, N 85° 55′ 10″ E, 54.20 feet to Corner 58 from which a standard Army Corp. of Engineers aluminum monument found as a witness and marked "58", bears N 05° 24′ 01″ W, 5.00 feet; and

4) thence from Corner 58, N 83° 16′ 49″ E, 161.08 feet to Corner 59 from which a standard Army Corp. of Engineers aluminum monument found as a witness and marked "59", bears N 44° 52′ 56″ E, 8.05 feet at its point of intersection with the common division line between the lands of United States of America on the west and lands now or formerly of Robert D. Quirk as described in Book 19670 of Deeds at Page 452, lands now or formerly of David A. and Margaret N. Purdy as described in Book 24564 of Deeds at Page 224, lands now or formerly of Dawson Heights Realty Trust, Thomas J. Sheridan, Trustee as described in Book 24569 of Deeds at Page 177, lands now or formerly of John Paul Loretta as described in Book 12585 of Deeds at Page 70, lands now or formerly of Thomas L. Coin, Jr. and Francoise Coin as described in Book 25025 of Deeds at Page 391, lands now or formerly of John P. O'Dowd and Christy H. Hill as described in Book 25025 of Deeds at Page 391 and lands now or formerly of John R. Allan as described in Book 14628 of Deeds at Page 98 on the east;

thence from Corner 59 and running along the above last mentioned common division line the following eight (8) courses:

1) S 06° 29' 04" W, 80.12 feet to Corner 60, from which a standard Army Corp. of Engineers aluminum monument found as a witness and marked "60", bears S 82° 58' 17" E, 5.00 feet;

2) thence from Corner 60, S 07° 34' 22" W, 173.61 feet to Corner 61, from which a standard Army Corp. of Engineers aluminum monument found as a witness and marked "61", bears S 82° 18' 26" E, 5.00 feet;

3) thence from Corner 61, S 07° 48' 47" W, 82.69 feet to Corner 62, a drill hole in an existing stone wall found as a witness;

4) thence S 07° 40′ 47″ W, 95.22 feet to Corner 63, a drill hole in an existing stone wall found as a witness;

5) thence S 08° 11' 25" W, 56.92 feet to Corner 64 from which a standard Army Corp. of Engineers aluminum monument found as a witness and marked "64", bears S 82° 25' 15" E, 5.00 feet;

6) thence from Corner 64, S 06° 58′ 04″ W, 125.86 feet to Corner 65, a drill hole in an existing stone wall found as a witness;

7) thence S 08° 14' 58" W, 53.43 feet to Corner 66, a drill hole in an existing stone wall found as a witness; and
8) thence S 07° 10' 05" W, 266.34 feet to Corner 67, from which a standard Army Corp. of Engineers aluminum monument found as a witness and marked "67" at its point of intersection with the northwesterly boundary of Old Marlborough Road;

thence along the said northwesterly road boundary the following two (2) courses:

1) S 40° 46' 34" W, 589.17 feet to Corner 68, a standard Army Corp. of Engineers aluminum monument found as a witness and marked "68"; and

2) thence S 41° 36' 04" W, 158.93 feet to the point or place of beginning and containing 29.697 acres of land more or less.

FEMA PARCEL II

COMMENCING at Corner 69, a standard USF&WS aluminum monument, set and marked "COR 69 1996" on the outside boundary of the Fort Devens, Sudbury Training Annex, at its point of intersection of the northwesterly road boundary of Old Marlborough Road with the southwesterly road boundary of Puffer Road and thence from point of commencement through the lands of the United States of America, Fort Devens, Sudbury Training Annex, N 81° 53' 30" W, 30.65 feet to Corner 10323 and being the true point of beginning of the hereinafter described FEMA Parcel II, from which a standard USF&WS aluminum monument, set as a witness and marked "COR 10340 1998" bears N 84° 21' 53" E, 10.12;

thence from Corner 10323 through the lands now or formerly of Fort Devens, Sudbury Training Annex, along the northwesterly boundary of a fifty (50) foot wide access and utility easement, the following seven (7) courses:

1) S 27° 15′ 03″ W, 51.18 feet to Corner 10324;

2) thence S 54° 06' 04" W, 120.13 feet to Corner 10307;

3) thence S 55° 24' 01" W, 186.06 feet to Corner 10306;

4) thence S 58° 10' 33" W, 186.50 feet to Corner 10305;

5) thence S 59° 32' 41" W, 273.06 feet to Corner 10304;

6) thence S 58° 52' 35" W, 228.40 feet to Corner 10303; and

7) thence S 55° 08' 51" W, 105.69 feet to Corner 10341, a standard USF&WS aluminum monument, set and marked "COR, 10341, 1998";

thence continuing through the lands now or formerly of Fort Devens, Sudbury Training Annex the following nine (9) courses: 1) N 29° 21' 42" E, 203. 66 feet to Corner 10339;

2) thence N 28° 07' 27" E, 126.79 feet to Corner 10348, a standard USF&WS aluminum monument, set and marked "COR 10348 1998";

3) thence N 17° 00' 52" E, 190.36 feet to Corner 10349, a standard USF&WS aluminum monument, set and marked "COR 10349 1998";

4) thence N 52° 09' 09" E, 38.60 feet to Corner 10350;

5) thence N 61° 32' 00" E, 203.82 feet to Corner 10351, a standard USF&WS aluminum monument, set and marked "COR 10351 1998";

6) thence N 58° 17' 22" E, 252.00 feet to Corner 10352;

7) thence N 44° 05' 33" E, 37.71 feet to Corner 10353;

8) thence N 25° 12′ 40″ E, 38.15 feet to Corner 10354; and

9) thence N 08° 16' 30" E, 16.28 feet to Corner 10338, a standard USF&WS aluminum monument, set and marked "COR 10338 1998" on the southerly boundary of a fifty (50) foot wide access easement;

thence continuing through the lands now or formerly of Fort Devens, Sudbury Training Annex, along the southerly and southwesterly boundary of a fifty (50) foot wide access easement the following five (5) courses:

1) S 73° 00' 09" E, 58.45 feet to Corner 10318;

2) thence S 68° 10' 29" E, 108.49 feet to Corner 10321;

3) thence S 49° 49' 41" E, 94.54 feet to Corner 10322;

4) thence S 44° 14' 00" E, 38.56 feet to Corner 10355; and

5) thence S 27° 13′ 32″ E, 21.97 feet to Corner 10323 the point or place of beginning and containing 5.650 acres of land more or less.

FEMA PARCEL III

COMMENCING at Corner 69, a standard USF&WS aluminum monument, set and marked "COR, 69 1996" on the outside boundary of the Fort Devens, Sudbury Training Annex, at its point of intersection with the northwesterly of boundary of Old Marlborough Road with the southwesterly boundary of Puffer road and thence from said point of commencement through the lands of the United States of America, Fort Devens, Sudbury Training Annex, S 22° 27' 02" W, 98.76 feet to Corner 10336, a standard USF&WS aluminum monument, set and marked "COR 10336 1998" and being the true point of beginning of the hereinafter described FEMA Parcel III;

thence from Corner 10336 through the lands now or formerly of Fort Devens, Sudbury Training Annex, parallel to and distant 25 feet westerly measured at right angles from the center line of wood road the following five (5) courses:

1) S 07° 31' 32" E, 15.28 feet to Corner 10329;

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2) thence S 00° 43' 53" W, 99.78 feet to Corner 10328;

3) thence S 07° 05′ 45″ W, 123.32 feet to Corner 10327;

4) thence S 11° 39' 35" W, 143.86 feet to Corner 10326; and

5) thence S 08° 39' 14" W, 20.28 feet to Corner 10347, at its point of intersection with an existing stonewall, a standard USF&WS aluminum monument set and marked "COR 10347 1998";

thence through the lands now or formerly of Fort Devens, Sudbury Training Annex, partially along an existing stonewall the following seven (7) courses:

1) S 65° 23' 27" W, 263.36 feet to Corner 6988;

thence S 64° 09' 03" W, 325.98 feet to Corner 6979;

3) thence S 64° 37' 31" W, 289.54 feet to Corner 10345, a standard USF&WS aluminum monument set and marked "COR 10345 1998";

4) thence S 72° 02' 01" W, 83.92 feet to Corner 10344, a standard USF&WS aluminum monument set and marked "COR 10344 1998";

5) thence N 59° 08' 45" W, 112.79 feet to Corner 10343, a standard USF&WS aluminum monument set and marked "COR 10343 1998";

6) thence N 46° 49' 50" W, 49.73 feet to Corner 10342, a standard USF&WS aluminum monument set an marked "COR 10342 1998"; and

7) thence N 46° 49′ 50″ W, 2.00 feet to Corner 10363, marked by a cross cut in a rock on the southeasterly boundary of a 50 foot wide access and utility easement;

thence continuing through the lands now or formerly of Fort Devens, Sudbury Training Annex, along the southeasterly boundary of said 50 foot wide access and utility easement the following eight (8) courses:

1) N 42° 51' 58" E, 53.12 feet to Corner 10314;

2) thence N 49° 02' 48" E, 95.13 feet to Corner 10313;

3) thence N 55° 08' 51" E, 144.76 feet to Corner 10312;

4) thence N 58° 52′ 35″ E, 226.48 feet to Corner 10311;

5) thence N 59° 32' 41" E, 273.37 feet to Corner 10310;

6) thence N 58° 10' 33" E, 188.31 feet to Corner 10309;

7) thence N 55° 24' 01" E, 187.84 feet to Corner 10308; and

8) thence N 54° 06' 04" E, 104.32 feet to the point or place of beginning and containing 6.436 acres of land, more or less.

FEMA PARCEL IV

COMMENCING at Corner 10373 on the northwesterly boundary of Old Marlborough road from which Corner 69 of the Sudbury Training Annex Transfer Tract (I) bears N 41° 36' 04" E, 46.18 feet;

thence from said point of commencement from Corner 10373 along the southwesterly and southerly boundary of herein described FEMA Parcel I the following four (4) courses:

1) N 49° 59' 03" W, 85.72 feet to Corner 6918;

2) thence N 49° 49' 36" W, 102.66 feet to Corner 10320;

3) thence N 68° 10' 29" W, 118.68 feet to Corner 10319; and

4) thence N 73° 00' 09" W, 58.97 feet to Corner 10374, a standard USF&WS aluminum monument, set and marked "COR 10374 1998", being the true point of beginning of beginning of the hereinafter described FEMA Parcel IV;

thence from Corner 10374 continuing through the lands of the Sudbury Training Annex Transfer Tract and along the northerly boundary of a 50 foot wide access easement the following seven (7) courses:

1) N 73° 00' 09" W, 43.97 feet to Corner 10317;

2) thence N 76° 59' 00" W, 105.28 feet to Corner 10366;

3) thence N 77° 31' 55" W, 161.21 feet to Corner 10367;

4) thence N 78° 02' 33" W, 213.86 feet to Corner 10368;

5) thence N 76° 49' 23" W, 103.23 feet to Corner 10369;

6) thence N 73° 03' 30" W, 271.67 feet to Corner 10380; and

7) thence N 66° 36' 11" W, 67.67 feet to Corner 10385, a standard USF&WS aluminum monument set and marked "COR 10385 1998";

thence continuing through the lands now or formerly of Fort Devens, Sudbury Training Annex the following two (2) courses:

1) N 23° 23′ 49″ E, 319.49 feet to Corner 10383, a standard USF&WS aluminum monument set and marked "COR 10383 1998"; and

2) thence S 80° 12' 41" E, 754.58 feet to Corner 10388, a standard USF&WS aluminum monument set and marked "COR 10388 1998" on the westerly boundary of FEMA Parcel I;

thence S 08° 46' 06" E, continuing through the lands now or formerly of Fort Devens, Sudbury Training Annex, along the westerly boundary of FEMA Parcel I a distance of 415.02 feet to Corner 10374 the point or place of beginning and containing 7.136 acres of land, more or less.

FEMA PARCEL V

BEGINNING at Corner 40 at its point of intersection with the division line between the lands of the United States of America on the Southeast and the lands now or formerly of Maynard Sand and Gravel as described in Book 10292 of Deeds of Page 154 on the northwest with the division line between the lands of the United States of America on the south and the lands now or formerly of Frances C. Denesivk and Elizabeth Schnair as described in Book 14873 of Deeds of Page 409 on the north, said Corner 40, being a standard Army Corp. of Engineers aluminum monument found as a witness and marked "40";

thence N 86° 51' 30" E, along the above last mentioned division line 590.00 feet to Corner 10375, marked by a standard USF&WS aluminum monument set and marked "COR 10375 1998";

thence from Corner 10375 through the lands now or formerly of Fort Devens, Sudbury Training Annex, the following five (5) courses:

1) S 00° 47' 35" E, 807.79 feet to Corner 10376, a standard USF&WS aluminum monument, set and marked "COR 10376 1998";

2) thence S 40° 33' 29" W, 164.05 feet to Corner 10378, a standard USF&WS aluminum monument, set and marked "COR 10378 1998";

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"thence S 45° 52' 09" W, 485.69 feet to Corner 10377, a standard USF&WS aluminum nonument, set and marked "COR 10377 1998";

) thence S 89° 51' 57" W, 392.26 feet to Corner 10362, a standard USF&WS aluminum nonument set and marked "COR 10362 1998" and;

i) thence S 89° 51' 57" W, 9.89 feet to Corner 10292, said point being fifteen (15) feet sasterly measured at right angles from the center line of a right-of-way from the "North Gate" through lands now or formerly of Fort Devons, Sudbury Training Annex, to the U. S. Air Force Parcel, said right-of-way known as White Pond Road;

thence continuing through the lands now and formerly of Fort Devons, Sudbury Training Annex, along the easterly boundary of said "Air Force" easement for ingress and egress, parallel to and distant 15 feet easterly measured at right angles from said easement center line, the following five (5) courses;

1) N 06° 52' 06" E, 218.97 feet to Corner 10293;

2) thence, N 10° 23' 47" W, 135.83 feet to Corner 10294;

3) thence N 22° 06' 13" W, 189.14 feet to Corner 10295;

4) thence N 12° 23' 16" W, 130.78 feet to Corner 10296; and

5) thence N 08° 18' 27" W, 237.65 feet to Corner 10297 at its point of intersection with the above first mentioned division line between the lands of the United States of America on the southeast and the lands now or formerly of Maynard Sand and Gravel on the northwest;

thence along the above first mentioned division line, the following two (2) courses:

1) N 45° 04' 31" E, 162.94 feet to Corner 39, a standard Army .Corp. of Engineers aluminum monument found as a witness and marked "39"; and

2) thence in a generally northeasterly direction along a curve to the right having a radius of 2,418.25 feet, a chord bearing of N 49° 21' 06 " E, and a chord distance of 360.66 feet and an arc length of 361.00 feet to Corner 40, and the true place of beginning containing 22,606 acres more or less.

TRACT 2M-1

Being a right-of-way from Old Marlborough Road to Puffer Pond, fifty (50) feet in width and being an easement for ingress, egress and utilities, the center line of which is more particularly bounded and described as follows:

BEGINNING at Corner 10397 from which Corner 69 of the Sudbury Training Annex Transfer Tract (1) bears N 46° 46' 29" W, 5.49 feet;

thence from Corner 10397 along the center line of said fifty (50) foot wide access and utility easement the following twenty-six (26) courses:

1) S 35° 46' 32" W, 68.16 feet to Corner 6899;

2) thence S 54° 06' 04" W, 124.44 feet to Corner 68%;

3) thence S 55° 24' 01" W, 186.95 feet to Corner 6891;

4) thence S 58° 10' 33" W, 187.40 to Corner 6887;

5) thence S 59° 32' 41" W, 273.21 feet to Corner 6873;

6) thence S 58° 52' 35" W, 227.44 feet to Corner 6868;

7) thence S 55° 08' 51" W, 146.91 feet to Corner 6864;

8) thence S 49° 02' 48" W, 97.81 feet to Corner 6862;

thence S 42° 51' 58" W, 54.47 feet to Corner 10398;

10) thence S 46° 43' 48" W, 96.61 feet to Corner 7026;

11) thence S 45° 50' 29" W, 124.34 feet to Corner 7028;

12) thence S 54° 03' 32" W, 168.16 feet to Corner 7029;

13) thence S 55° 06' 17" W, 167.75 feet to Corner 7024;

14) thence 5 27° 40′ 11″ W, 120.78 feet to Corner 7021;

15) thence S 65° 44' 20" W, 16.06 feet to Corner 7019;

16) thence N 49° 33' 06" W, 147.64 feet to Corner 7015;

17) thence N 47° 57' 00" W, 66.22 feet to Corner 7014;

18) thence N 53° 56' 00" W, 140.12 feet to Corner 7012;

19) thence N 48° 38' 43" W 57.04 feet to Corner 6808;

20) thence S 88° 14' 52" W 33.10 feet to Corner 7009;

21) thence S 77° 26' 54" W, 24.10 feet to Corner 7008;

22) thence S 66° 52' 42" W, 25.34 feet to Corner 7007;

23) thence S 60° 10′ 28″ W, 26.86 feet to Corner 7005;

24) thence N 60° 00' 26" W, 32.40 feet to Corner 7004;

25) thence N 63° 40' 50" W, 47.04 to Corner 10298; and

26) thence N 43° 06' 14" W, 25.25 feet to Corner 10299 at the terminus of said easement.

Being a fifty (50) foot wide strip of land, approximately 2686 feet in length to be used for access to FEMA Parcel II and FEMA Parcel III and as an utility easement for the reconstruction and maintenance of a water pipeline together with all necessary appurtenances, as said water line exists from the FEMA Parcel I, Headquarters site to the Puffer Pond wells site.

TRACT (2R)

Being a right-of-way from Old Marlborough Road to the Unit Training Parcel, Tract 2M, through the lands now or formerly of Fort Devens, Sudbury Training Annex, the first portion being fifty (50) feet in width, being an easement for ingress and egress, the center line of which being more particularly bounded and described as follows:

BEGINNING at Corner 10392 on the northwesterly boundary of Marlborough Road from which Corner 69 of the Sudbury Training Annex Transfer (1) bears N 41° 36' 04 " E, 21.17 feet;

thence from Corner 10392 through the lands now or formerly of Fort Devens, Sudbury Training Annex the following forty-nine (49) courses:

1) N 49° 59' 03" W, 85.06 feet to Corner 10393;

2) thence N 49° 49′ 41″ W, 98.66 feet to Corner 10394

3) thence N 68° 10' 29" W, 113.58 feet to Corner 6959;

4) thence N 73° 00' 09" W, 101.01 feet to Corner 6961;

5) thence N 76° 59' 00' W, 104.29 feet to Corner 6963;

thence N 77° 31′ 55″ W, 160.98 feet to Corner 6966;

7) thence N 78° 02' 33" W, 214.01 feet to Corner 6970;

8) thence N 76° 49' 23" W, 103.49 feet to Corner 6973;

9) thence N 73° 04' 10" W, 274.71 feet to Corner 7962;

10) thence N 66° 36' 11" W, 116.59 feet to Corner 7964;

11) thence N 58° 02' 57" W, 212.45 feet to Corner 7971;

12) thence N 46° 53' 15" W, 264.56 feet to Corner 7976;

13) thence N 46° 23' 47" W, 606.58 feet to a point of curvature at Corner 10007;

14) thence in a generally northwesterly direction along a curve to a left, having a radius of 550.00 feet, a chord bearing of N 65° 55′ 38″ W, and a chord distance 358.35 feet, an arc length of 365.01 feet to a point of tangency at Corner 10010;

15) thence N 84° 56' 23" W, 670.61 feet to Corner 10011;

16) thence N 49° 56' 19" W, 414.34 feet to a point of curvature at Corner 10012;

17) thence in a generally northerly direction along a curve to the left, having a radius of 175.00 feet, a chord bearing of N 18° 53' 38" W, and a chord distance of 184.96 feet, an arc length of 194.87 feet to a point of tangency at Corner 10016;

18) thence N.13° 00' 23" E, 298.36 feet to Corner 10016;

19) thence N 19° 25' 22" E, 221.94 feet to a point of curvature at Corner 10017;

20) thence in a generally northerly direction along a curve to the left, having a radius of 568.00 feet, a chord bearing of N 02° 19′ 59″ W, and a chord distance of 421.06 feet, an arc length of 431.35 feet to a point of tangency at Corner 10019;

21) thence N 24° 05' 21" W, 300.01 feet to Corner 10020;

22) thence N 07° 38' 51" W, 318.35 feet to Corner 10021;

23) thence N 18° 26' 45" W, 367.39 feet to Corner 10022;

24) thence N 60° 52′ 53″ W, 129.67 feet to Corner 10023;

25) thence N 67° 11' 16" W, 149.27 feet to Corner 10024;

26) thence N 83° 36' 48"W, 360.29 feet to Corner 10025;

27) thence N 71° 05' 35" W, 397.19 feet to Corner 10026;

28) thence N 70° 53' 36" W, 205.64 feet to Corner 10027;

29) thence N 61° 38' 25" W, 234.91 feet to Corner 10028;

30) thence N 74° 16' 03" W, 117.70 feet to Corner 10029;

31) thence S 85° 17' 36" W, 34.75 feet to Corner 10031;

32) thence S 58° 39' 32" W, 584.74 feet to Corner 10032;

33) thence S 43° 18' 42" W, 97.15 feet to Corner 10033;

34) thence S 57° 03' 53" W, 116.98 feet to Corner 10034;

35) thence S 65° 56' 26" W, 444.80 feet to Corner 10036;

36) thence N 82° 37' 51" W, 216.98 feet to Corner 10037

37) thence N 88° 24' 11" W, 256.71 feet to Corner 6732, said point being on the center line of the Air Force White Pond Road easement;

38) thence continuing through the lands of Sudbury Training Annex along the center line of the thirty (30) foot wide portion of said easement S 20° 49′ 48″ W, 387.49 feet to Corner 10039;

39) thence S. 21° 35' 22" W, 469.24 feet to Corner 10040;

40) thence S 23° 59' 01" W, 156.95 feet to Corner 10041;

41) thence S 33° 02' 28" W, 149.23 feet to Corner 10042;

42) thence S 46° 06' 22" W, 430.34 feet to Corner 10043;

43) thence S 41° 53' 31" W, 382.99 feet to Corner 10044;

44) thence S 39° 28' 35" W, 322.65 feet to a point of curvature at Corner 10045;

45) thence in a generally southerly direction along a curve to the left, having a radius of 155.49 feet, a chord bearing S 15° 42′ 48″ W, and a chord distance of 97.89 feet, an arc length of 99.59 feet to Corner 10048;

46) thence continuing through the lands of the Sudbury Training Annex along the center line of the twenty (20) foot wide portion of said easement S 50° 39' 37" W, 884.24 feet to Corner 10049;

47) thence S 38° 00' 52" W, 119.61 feet to Corner 10050;

48) thence S 20° 51' 31" W, 161.88 feet to Corner 10051; and

49) thence S 36° 05′ 30″ E, 211.34 to Corner 10396 on the northwesterly boundary of the 3.476± acre Unit Training Parcel, Tract 2M, being the terminus of the above described varied width easement for ingress and egress from Old Marlborough Road to White Pond Road to the Unit Training Parcel, Tract 2M.

TRACT (2R-1) FEMA PORTION (1R)

Being a thirty (30) foot wide right-of-way from Northgate through the lands now or formerly of Fort Devons, Sudbury Training Annex, to the varied width right-of-way for ingress and egress leading from Old Marlborough Road to the FEMA Unit Training Parcel, Tract 2M, and being an easement for ingress and egress the center line of which being more particularly bounded and described as follows:

BEGINNING at Corner 6728 from which Corner 38 of the Sudbury Training Annex Transfer Tract (1) bears N 45° 04' 31" E, 51.68 feet;

thence from Corner 6728 and through the lands now or formerly of Fort Devens, Sudbury Training Annex, the following five (5) courses:

1) thence S 08° 18' 27" E, 227.04 feet to Corner 6371;

2) thence S 12° 23' 16" E, 132.58 feet to Corner 6366;

3) thence S 22° 06' 13" E ,188.88 feet to Corner 6729;

4) thence S 10° 23' 47" E, 132.01 feet to Corner 6730; and

5) thence S 06° 52' 06" W, 218.54 feet to Corner 6731 being a point of terminus of the above described thirty (30) foot wide easement for ingress and egress on the center line of the varied width right-of-way ingress and egress easement, 2R, from Marlborough Road to the previously described FEMA Unit Training Parcel, Tract 2M.

The above described tracts of land are delineated on a plan entitled "United States Department of Interior Fish and Wildlife Service, Great Meadows National Wildlife Refuge Puffer Pond Division, Sudbury Training Annex Transfer Tract (1,1R,2R,2R-1,1E,1E-1,1E-2,2M,2M-1) 2007.1 acres, Middlesex County, Towns of Maynard, Stow and Sudbury, Commonwealth of Massachusetts," surveyed November 1986, map prepared October 18, 1996, last revised December, 1998, prepared by C.T. Male Associates, P.C., Latham, New York, said plan as of record in the files of the Department of Interior. A print of that plan is attached hereto.

MEMORANDUM OF AGREEMENT BETWEEN THE DEPARTMENT OF THE ARMY AND THE FEDERAL EMERGENCY MANAGEMENT AGENCY FOR THE TRANSFER OF REAL PROPERTY AT THE SUDBURY TRAINING ANNEX, MASSACHUSETTS

The Federal Emergency Management Agency (hereinafter "FEMA") and the Department of the Army (hereinafter the "Army") hereby enter into a Memorandum of Agreement (MOA) to clarify responsibilities and requirements of both parties pursuant to the transfer of real property at the Sudbury Training Annex, Massachusetts (hereinafter the "Annex"), from the Army to FEMA. The authority to enter into this MOA is the Defense Base Closure and Realignment (BRAC) Act of 1990, Public Law 101-510, 10 U.S.C. Section 2687, note; and the Federal Property and Administrative Services Act of 1949 (FPASA), 40 U.S.C. Sections 471-544.

A. INTRODUCTION

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The Annex was identified for closure under BRAC in 1995. FEMA has had a permit to occupy a part of the Annex hereinafter known as "Parcel I" since 27 May 1980 (hereinafter the "Use Permit Date"), and the Army will transfer to FEMA a total of 71.525 acres of land (hereinafter the "FEMA Parcel") that includes 5 non-contiguous small parcels, including Parcel I. FEMA intends to continue to use the land for its operations and training missions. The FEMA Parcel includes two large buildings (one above ground and one under ground), several communication antennas, and other structures and improvements that were owned and operated by FEMA on Parcel I. The boundaries of the FEMA Parcel are identified in the official survey map and legal description dated December 1998, copies of which are on file with the U.S. Army Corps of Engineers, New England District, Concord, Massachusetts, and attached as Exhibit A to the letter of transfer.

NOW, THEREPORE, the parties agree as follows:

B. TRANSFER OF REAL PROPERTY

1. The Army agrees to transfer by DD form 1354, and FEMA agrees to accept the transfer of , certain real property (hereinafter referred to as the "Property") consisting of a total of 71.25 acres of land (the FEMA Parcel) located at the Sudbury Training Annex, Massachusetts, and including 5 non-contiguous small parcels, among them Parcel I. FEMA intends to continue to use the land for its operations and training missions. The FEMA Parcel includes two large buildings (one

above ground and one under ground), several communication antennas, other structures and improvements that were owned and operated by FEMA on Parcel I since the Use Permit Date.

2. In accordance with an Office of Management and Budget waiver dated 26 September 2001, the acquisition of the FEMA Parcel, the buildings located on the Parcel, and the fixed equipment will be conveyed to FEMA for no-cost.

C. ACKNOWLEDGMENTS AND GENERAL CONDITIONS

1. The Army has had no operational presence on the property or facilities owned, built, or operated by FEMA on Parcel I since the Use Permit Date.

2. The Army has completed an Environmental Baseline Survey (EBS, January 1997), the BRAC Cleanup Plan Report (October 1996), and an Environmental Condition of Property (ECOP, August 2002). The ECOP and the EBS summarize what is known about the environmental condition of the property and reflect the Army's finding that the property is suitable for transfer to another federal agency, FEMA, for its continued use as a management facility and as a training area. FEMA acknowledges receipt of the EBS and ECOP. The Army has completed any necessary remediation for the FEMA Parcel as identified in the EBS and further described in the ECOP. FEMA has been given the opportunity to inspect the property.

3. In accordance with the National Environmental Policy Act, the Army completed a Record of Environmental Consideration (REC) dated 16 Jan 97 for this property disposal and determined that the disposal would not have any significant impact on the quality of the natural or human environment. FEMA acknowledges receipt of a copy of that REC.

D. ENVIRONMENTAL CONDITION AND COMPLIANCE RESPONSIBILITIES

1. The Army and FEMA acknowledge that the Annex was previously listed as a National Priorities List (NPL) site under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended. The Army has provided FEMA with a copy of the Sudbury Training Annex Federal Facility Agreement (FFA) entered into by the United States Environmental Protection Agency, Region 1, (EPA) and the Army on 13 May 1991, and made effective on 15 November 1991; and FEMA acknowledges receipt of this document. The Army agrees to provide FEMA with any future amendments to the FFA. FEMA agrees to take no action inconsistent with the terms of the FFA. The environmental remediation of the Sudbury Training Annex NPL Site was undertaken by the Army in accordance with the FFA negotiated with the EPA and in cooperation with the Massachusetts Department of Environmental Protection (MADEP). The Army and FEMA agree that should a conflict arise between the terms of the FFA as it presently exists or as amended and the provisions of this MOA, the terms of the FFA will take precedence over the provisions of this MOA. The Army will inform FEMA of any such conflicts affecting the FEMA use of its parcel. Both parties to this MOA are required to provide notice to EPA and MADEP of any modifications, amendments or termination of the

MOA. FEMA and it successors and assigns shall take no action inconsistent with the terms of the FFA.

2. If there is an actual or threatened release of a hazardous substance on that portion of Parcel I which has been occupied by FEMA since the Use Permit Date, or in the event that a hazardous substance is discovered on that parcel after the Use Permit Date, FEMA or its successors or assigns shall be responsible for such release or newly discovered substance, unless FEMA can adequately demonstrate that such release or newly discovered substance was present on the property prior to the Use Permit Date or such release or newly discovered substance is determined to be attributable to past activities of the Army, its contractors or agents. This paragraph shall not affect the Army's responsibilities to conduct Response Actions that are required by applicable laws and regulations.

3. The FEMA Parcel may include buildings, structures or other improvements with asbestos containing materials (hereinafter "ACM"), lead-based paint, and/or polychlorinated biphenyls (hereinafter "PCBs"). To the extent it is available, information regarding ACM, lead-based paint, and PCBs on the Property is contained in the EBS and the ECOP. After the date of transfer, the FEMA shall be responsible for any and all remediation or abatement of any remaining ACM, lead-based paint, lead-based paint, and PCBs on the Property.

4. Right of Access

a. The Army reserves a right of access to and over any and all portions of the FEMA Parcel for itself and its officers, agents, employees and contractors, for purposes of conducting Response Actions after the date of transfer in order to fulfill the Army's environmental responsibilities under this Agreement, the FFA (including Section IX - ACCESS of the FFA), and applicable law. This right shall run with the land, and FEMA shall provide for and preserve the right of access to the property by the Army as set forth in this Subsection in any subsequent transfer or conveyance of the Property. Except in case of imminent endangerment to human health or the environment, the Army shall give FEMA or the then record owner of the affected portion(s) of the FEMA Parcel reasonable prior notice of the Response Action(s) to be conducted on the FEMA Parcel, and shall use reasonable means, without significant additional cost to the Army, to avoid and/or minimize interference with FEMA's or such record owner's use of the FEMA Parcel. Subject to the provisions of this Agreement, and except as otherwise provided for by law, FEMA, such record owner, and any other person shall have no claim or cause of action against the Army, or any officer, agent, employee or contractor of the Army, for interference with the use of the FEMA Parcel arising from Army implementation of the FFA or Army Response Actions taken under this Subsection.

b. Nothing in this Agreement shall limit or otherwise affect the Army's, EPA's or MADEP's rights of access to and over any and all portions of the FEMA Parcel under applicable law for purposes including but not limited to:

(1). conducting oversight activities, including but not limited to investigations, sampling, testing, monitoring, verification of data or information submitted to EPA or MADEP, and/or site inspections, in order to monitor the effectiveness of Response Actions and/or the protectiveness of any remedy which is required by (i) any record of decision ("ROD") or amendments thereto-or (ii) any decision document approved by MADEP and issued by the Army under applicable state law before or after the Date of Transfer.

(2). performing five-year reviews as required by CERCLA, and;

(3). taking additional Response Actions in accordance with applicable law and the FFA.

5. FEMA shall comply with any institutional controls established or put in place by the Army relating to the FEMA Parcel which are required by any ROD or amendments thereto. Additionally, FEMA shall ensure that any leasehold or transfer it grants in the FEMA Parcel or any fee or easement interest conveyance of any portion thereof provides for legally binding compliance with the institutional controls required by any such ROD.

6. For any portion of the FEMA Parcel subject to a Response Action under CERCLA or the FFA, FEMA and its successors and assigns (i) shall, prior to the conveyance of an interest therein, include in all conveyance documents provisions for allowing the continued operation of any monitoring wells, treatment facilities, or other response activities undertaken pursuant to CERCLA or the FFA on said portion of the FEMA Parcel, and (ii) shall notify the Army and EPA by certified mail at least sixty (60) days prior to any such conveyance of an interest in said property, which notice shall include a description of said provisions allowing for the continued operation of any monitoring wells, treatment facilities, or other response activities undertaken pursuant to cercLA or the FFA.

7. FEMA acknowledges that arsenic-based herbicides were applied in the vicinity of the fence-line along Patrol Road and on the former railroad beds on the northern and southern portions of the Sudbury Annex, and that the Army has concluded, after completing a facility-wide investigation, that the resulting concentrations of arsenic in the soil do not pose an unacceptable risk to human health or the environment based on the future land use of the FEMA Parcel for operations (offices, a communication center, storage space and communication antennas) and training (in establishing mobile communications centers in the field).

a. FEMA is informed and does acknowledge that pesticides may be present on the Property. To the best of the Army's knowledge, the past use and application of any pesticide product by the Army was in accordance with its intended purpose, and any pesticide residue resulting from such application does not an unacceptable risk to human health and the environment. To the extent allowed under CERCLA Section 107(i), the Army assumes no liability for damages or for future remediation of such pesticide residue.

b. FEMA agrees that its continued possession, potential use and continued management of the Property, including any demolition of structures, will be in compliance with all applicable laws relating to hazardous substances/pesticides and hazardous wastes.

c. To the best of the Army's knowledge and according to FEMA, there are no hazardous materials that remain or pose an unacceptable risk to human health or the environment on this property. No transformers containing PCB are on the property, nor has any lead-based paint or friable asbestos been identified during inspections. Since the Army does not own, operate or maintain any buildings or structures on the FEMA Parcel, the environmental condition and responsibility for any remediation found to be necessary for these buildings and any other structures will remain the responsibility of FEMA. FEMA agrees that its future use of the property after the date of transfer will be in compliance with all applicable laws relating to hazardous substances, petroleum, underground and above-ground storage tanks, PCBs, asbestos, lead based paint, radiological materials, radon, etc. Both the Army and FEMA agree that institutional controls listed in the MOA will be maintained even though the site has been delisted from the NPL.

8. Information received from FEMA indicates that there is no lead-based paint in the buildings on the property. However, because of FEMA access restrictions to the buildings constructed and operated by FEMA, this cannot be confirmed by the Army. Available information concerning known lead-based paint and/or lead-based paint hazards contained in the Environmental Baseline Survey, have been provided to FEMA. FEMA hereby acknowledges receipt of all of the information described in this paragraph. Further, FEMA acknowledges that it has received the opportunity to conduct its own risk assessment or inspection for the presence of lead-based paint and/or lead-based paint and/or lead-based paint the security of this document

a. The Army and FEMA acknowledge that all buildings on the FEMA Parcel, which were constructed or rehabilitated prior to 1978, are presumed to contain lead-based paint on the interior and/or exterior. Continued exposure to lead from paint, paint chips, and dust may pose a health hazard to young children if not managed properly. Prior to occupation of such buildings for residential purposes, FEMA will be responsible for the evaluation, notification, management, and abatement, if necessary, of any lead-based paint hazards in accordance with Applicable Law, to include the guidelines and regulations established pursuant to Title X of the Housing and Community Development Act of 1992. Residential buildings visited regularly by the same child, 6 years of age or under, on at least two different days within any week, including day-care centers, preschools and kindergarten classrooms and similarly used buildings; and, any surrounding land, including outbuildings, fences and play equipment affixed to the land, available for use by residential purposes; and, not including paint on the pavement of parking lots, garages, or roadways.

b. FEMA further covenants that it and its successors and assigns shall include in any

deed or other conveyance document transferring any interest in any or all of the FEMA Parcel a restrictive covenant that identifies the use restriction set forth in this Subsection D.8 to all successors in interest to any interest in any part or all of the FEMA Parcel. It is the intention of FEMA and the Army that this use restriction shall run with the land comprising the FEMA Parcel.

9. FEMA acknowledges that prior to the transfer of the FEMA Parcel to FEMA, the Army completed an Ordnance and Explosives Survey/Removal Action covering the entire Annex to determine if explosives or ordnance (OE) existed on the site. No OE was discovered. The Conclusion of the Final UXO Characterization Report of 18 February 1998, however, states that: "Unless 100 percent of the site is searched, it cannot be positively determined with complete accuracy that no OE is present on the site. However, based upon the results of the surface and sub-surface activities and the results of the Site Stats/Grid Stats Random Selection Program, Sudbury Annex, Massachusetts, it does not show evidence of being contaminated with OE or OE related material and can be excessed without further UXO activities except the 18 earth covered magazines. The interiors of these magazines require an inspection prior to being released with the Annex." The magazine area is not located near the FEMA parcel. FEMA acknowledges receipt of a copy of the Conclusions of the Army's Final UXO Characterization Report of 16 February 1998.

10. FEMA acknowledges that the subsurface soil below the depth of four (4) feet on the FEMA Parcel may contain OE or OE-related material as a result of past Army activities on the FEMA Parcel.

a. FEMA covenants on behalf of itself and its successors and assigns that, except as provided herein, no activity or use shall be undertaken on the FEMA Parcel that might disrupt or otherwise negatively impact the subsurface soil below the depth of four (4) feet. Such prohibited activities and uses shall include any disturbance of the subsurface soil below the depth of four (4) feet in any manner, including but not limited to construction activities such as filling, drilling, excavation or change of topography. FEMA covenants on behalf of itself and its successors and assigns that if, however, it or its successor or assign wants to undertake an activity or use on the FEMA Parcel that will disrupt or otherwise negatively impact the subsurface soil below the depth of four (4) feet, including any construction activities involving the disturbance or disruption of the subsurface soil below the depth of four (4) feet, FEMA or its successor or assign, following written notice to and approval by the Army of any such activity or use, shall pay for all costs associated with the clearance or removal of any OE or OE-related material discovered on the FEMA Parcel below the depth of four (4) feet. FEMA further covenants on behalf of itself and its successors and assigns, that it shall include in any deed or other conveyance document transferring any interest in any or all of the FEMA Parcel a restrictive covenant that identifies the use restriction and conditions set forth in this Subsection. It is the intention of FEMA and the Army that this use restriction shall run with the land comprising the FEMA Parcel.

b. The Army covenants to FEMA and its successors and assigns that the Army shall provide OE safety assistance at no cost to FEMA or its successor or assign, including the clearance or removal of any OE or OE-related material discovered on the FEMA Parcel in the course of non-construction activities, including but not limited to landscaping, routine repair and maintenance, security surveys, and other activities not involving the disturbance or disruption of the subsurface soil on the FEMA Parcel below the depth of four (4) feet. FEMA and its successors and assigns shall notify the Army immediately if any OE material is discovered. The Army also covenants to FEMA and its successors and assigns that it shall be responsible for the investigation and clearance or removal of all chemical munitions and all OE refuse sites found on the FEMA Parcel. An OE refuse site is defined as a site where military munitions have been collected and disposed of by burial on which there are ten (10) or more munitions in a cubic yard. FEMA covenants on behalf of itself and its successors and assigns that it and its successors and assigns shall include notice of these Army covenants in any deed or other conveyance document transferring any interest in any or all of the FEMA Parcel.

11. Lands to be transferred to FEMA have been partially surveyed for historic properties. Known archeological sites are present on the property. These sites may be eligible for the National Register of Historic Places. As a federal agency; with the responsibility to comply with all federal laws and regulations that govern the treatment of cultural resources, FEMA will be responsible-for the completion of any necessary historic property inventories for lands it is to receive from the Army and for taking into account the effects of its undertakings on historic properties discovered there.

E. LIABILITY

1. Each party to this Agreement shall be responsible for any liability arising from its own conduct. Neither party agrees to insure, defend, or indemnify the other.

2. Except as otherwise provided in this MOA, the Army, rather than FEMA, shall remain liable and responsible for any costs, claims, or damages arising against the U.S. Government for the use, management, release or disposal of hazardous substances, hazardous waste, or petroleum products, or any other contamination thereof existing on or emanating from Parcel I prior to the Use Permit Date and for the remainder of the FEMA Parcel up until the date of transfer to FEMA. FEMA assumes liability and responsibility for contamination caused by use, management or release of hazardous materials, hazardous substances, hazardous wastes or petroleum products by FEMA for Parcel I as of the Use Permit Date and for the FEMA Parcel as of the date of its transfer to FEMA.

3. In the circumstances described in Subsection D.2. above, the Army shall remain responsible for funding and implementing actions to include investigations, sampling, testing, cleanup, restoration, maintenance, monitoring, closure, five-year reviews, site inspections, removal actions, remedial actions, corrective actions and any other actions necessary to ensure

the protection of human health and the environment. FEMA shall assume no liability or costs arising out of or related to contamination existing prior to the FEMA Use Permit Date for Parcel I or prior to the date of transfer for the remainder of the FEMA Parcel.

4. FEMA agrees to hold the Army harmless from, and indemnify the Army against, any liability for any claims arising out of or in any way predicated on release of any hazardous substance on Parcel I occurring after the Use Permit Date, and on the remainder of the FEMA parcels after the date of transfer, where such substance was placed on the property by FEMA, its successors or assigns, its agents, contractors, invitees, or its lessees or subleases. Unless it is attributable to Army occupancy of the property, the Army will have no liability for future remediation of any hazardous substances, petroleum, underground and above ground storage tanks, PCBs, asbestos, lead-based paint, radiological materials, radon, etc., and will have no liability for damages for personal injury, illness, disability, or death to FEMA employees, officers, or agents, or any successors or assigns, lessees, licensees, or to any other person, including members of the general public, arising from or incident to the purchase, transportation, removal, handling, use, disposition, or other activity causing or leading to contact of any kind whatsoever with such substances on the property, whether or not FEMA, its successors or assigns have properly warned or failed to properly warn the individual(s) injured.

F. TRANSFER OF THIS PARCEL WITHOUT WARRANTY OR REPRESENTATION

1. FEMA shall accept transfer of the FEMA Parcel, including all FEMA owned, built, and operated buildings, structures and other improvements from the Army without any representation, warranty, or guaranty by the Army as to the quality, character, condition, size, kind, or that the same is in condition or fit to be used for the purpose FEMA intends, except for the Army's position that the property is suitable for transfer and the Army's continuing obligations as provided within this MOA.

2. FEMA shall covenant for itself, its successors, and assigns that it shall include in any subsequent grant, lease, transfer or conveyance documents all required covenants and restrictions described in this MOA (such as residential use restriction, digging/ground disturbance limitations) as well as any required because of FEMA ownership and operation of the facilities (such as lead-based paint, PCBs and asbestos) and CERCLA 120(h). FEMA agrees that these institutional controls are necessary on the property because of its occupancy, benefit the public in general and the territory surrounding the property, run with the land, and are enforceable by the U. S. Government.

F. NOTIFICATION REQUIREMENTS

Any notices to be provided pursuant to this MOA shall be addressed to: -U.S. Army: Commander, Devens Reserve Forces Training Area, 31 Quebec Street, Devens, MA 01432-4424, telephone (978) 796-3053.

- Federal Emergency Management Agency: Mr. Vernon L. Wingert, Chief, Support Services Liaison Branch FEMA, 500 C St., SW, Room 325, Washington, DC 20472, telephone: (202) 646-2872.

G. MISCELLANEOUS AGREEMENTS

1. If any provision of this MOA becomes invalid or unenforceable, the remaining provisions shall remain in force and unaffected to the extent permitted by law and regulation.

2. In the event of a dispute between the parties, The Army and FEMA agree that they will use their best efforts to resolve the dispute in an informal fashion through consultation and communication, or other forms of non-binding alternative dispute resolution mutually acceptable to the parties.

H. OBLIGATION OF APPROPRIATIONS

No provision of this agreement shall be interpreted or applied so as to obligate the Army or FEMA in excess or advance of appropriations or otherwise so as to result in a violation of the Anti-Deficiency Act, 31 U.S.C. Section 1341.

IN WITNESS WHEREOF, each of the parties has executed this MOA effective on the date last signed, the <u>215t</u> day of <u>MPRE 6</u> 2003.

DEPARTMENT OF THE ARMY

and W. Wittle

JOSEAH W. WHITAKER Deputy Assistant Secretary of the Army (Installations and Housing) OASA(I&E)

FEDERAL EMERGENCY MANAGEMENT AGENCY

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MICHAEL D. BROWN Acting Under Secretary Emergency Preparedness & Response Department of Homeland Security, on behalf of the Federal Emergency Management Agency

COMMONWEALTH OF VIRGINIA) COUNTY OF ARLINGTON)

I, the undersigned, a Notary Public in and for the Commonwealth of Virginia, County of Arlington, whose Commission as such expires on the <u>3044</u> day of <u>November</u>, 2006, do hereby certify that this day personally appeared before me in the Commonwealth of Virginia, County of Arlington, Joseph W. Whitaker, whose name is signed to the foregoing document and acknowledged this document is his free act and deed, dated this <u>21st</u> day of <u>Mauch</u>, 2003.

en a. Cooper PUBLIC

THE DISTRICT OF COLUMBIA

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Subscribed and swom to before me by Michael D. Brown, who is to me well known, this 3rd day of March, 2003.

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ANOREA WILLIAMS Notary Public, District of Columbia My Commission Expires May 14, 2006



Responses to EPA's Comments provided in text in Red-line Strike Out (RLSO) on the Final Sudbury Annex FYR dated September 21, 2016

EPA Letter and RLSO text received September 23, 2016

COMMENTS FROM RLSO TEXT

RTC 1Pg E-ii – Items 1 through 6 – New actions to meet future protectiveness, no FYR addendum is needed.

RESPONSE: Agreed.

RTC 2Pg E-iii – First paragraph – Delete "There are currently no concerns related to LUCs identified in this report."

RESPONSE: Agreed. Text edit will be accepted.

RTC 3Pg E-iv Table 1/Issues Category: Revise section to following:

1. A water supply well was installed by USF&WS at AOC A9, an area that previously had contamination. The institutional controls should prevent these actions from occurring in the future if the groundwater is determined to pose an unacceptable risk. The institutional controls for groundwater should be evaluated and modified if necessary.

2. Hornet nests are blocking gas vents so they cannot be sampled. The gas vents need to be cleaned and the sampled in accordance with the LTMMP.

3. Well SUDWP-A7-0l contained insufficient water to conduct sampling in 2015. The monitoring plan should be evaluated to determine if this well should be replaced.

RESPONSE: Agreed. Text edit will be accepted.

RTC 4Pg E-iv Table 1/Recommendations: Revise section to following:

1. Implement temporary ICs to ensure the WSW at AOC A9 is not used until a groundwater investigation is completed.

2. Remove Hornet nests in gas vents prior to next sampling round in 2016 and report data in accordance with the LTMMP.

3. The well SUDWP-A7-01will be redeveloped prior to sampling in 2016. At that time it should be determined if a new well should be installed at a deeper depth or sampling should occur during times of a higher water table. A technical memo will be submitted with Army's recommendation.

RESPONSE: Agreed. Text edit will be accepted.

RTC 5 Pg E-v Table 1/Issues and Recommendations Identified in the Five-Year Review – Revise table to the following:

Table 1				
Issues and Recommendations Identified in the Five-Year Review:				
AOC A7 and A9	Issue Category: Monitoring			
	Issues:			
	4. The emerging contaminants, Per- and Polyfluoroalkyl Substances (PFAS), Perchlorate, and 1,4-dioxane may have been disposed of at AOC A7 and AOC A9.			
	5. In addition, PFAS may have been used at other areas of the site. Impacts from these contaminants must be evaluated to determine if additional actions are warranted.			
	6. Contaminants in groundwater at AOC A9 were above MCLs at the time of the 1997 OU2 Management of Migration ROD. The current concentrations of contaminants in groundwater are not know. A water supply well was installed by USF & WS at AOC 9 and it is unknown if this well is being impacted by current conditions or could be impacted in the future if used. The current extent of contamination should be characterized and current and future impacts to this water supply well should be evaluated to determine if the well should be utilized.			
	Recommendation:			
	4. Prepare and implement a sampling and analysis plan and implement groundwater sampling for emerging contaminants, including perchlorate, 1,4 dioxane and PFAS at AOC A7 and A9 to determine if these contaminants are currently impacting groundwater at AOC7 and A9.			
	5. Prepare and implement a PA work plan to determine if PFAS had been used, stored, or disposed of at any other areas of the site in addition to AOC7 and A9.			
	6. Prepare and implement a work plan to evaluate groundwater at AOC A9 and determine if historical impacts above the MCLs are present and if overburden groundwater could affect the USFWS water supply well currently or in the future. If the groundwater exhibits unacceptable risk revise existing ICs to insure that additional water supply wells are not installed in the future.			
Affect Current Protectiveness	Affect Future Protectiveness	Implementing Party	Oversight Party	Milestone Date
No	yes	Army	EPA and MADEP	September 2017

RESPONSE: Agreed. Text edit will be accepted.

RTC 6 Pg. E-vi – Revise Protectiveness Statement Addendum Due Date to N/A *RESPONSE: Agreed. Text edit will be accepted.*

RTC 7 Pg E-vi – Table 1 Protectiveness Statement(s) - Revise Protectiveness Statement to include the following:

1. Implement temporary ICs to ensure the WSW at AOC A9 is not used until a groundwater investigation is completed.

2. Remove Hornet nests in gas vents prior to next sampling round in 2016 and report data in accordance with the LTMMP.

3. The well SUDWP-A7-01will be redeveloped prior to sampling. At that time it should be determined if a new well should be installed at a deeper depth or sampling should occur during times of a higher water table. A technical memo will be submitted with Army's recommendation.

4. Prepare and implement a sampling and analysis plan and implement groundwater sampling for emerging contaminants, including perchlorate, 1,4 dioxane and PFAS at AOC A7 and A9 to determine if these contaminants are currently impacting groundwater at AOC7 and A9..

5. Prepare and implement a PA work plan to determine if PFAS had been used, stored, or disposed of at any other areas of the site in addition to AOC7 and A9.

6. Prepare and implement a work plan to evaluate groundwater at AOC A9 and determine if historical impacts above the MCLs are present and if overburden groundwater could affect the USFWS water supply well currently or in the future. If the groundwater exhibits unacceptable risk revise existing ICs to insure that additional water supply wells are not installed in the future.

RESPONSE: Agreed. Text edit will be accepted.

RTC 8Pg 4-6; Section 4.3.3 Institutional Controls, third bullet first paragraph – change four feet site wide to four feet site deep.

RESPONSE: Agreed. Text edit will be accepted

RTC 9Pg 5-1; Insert 2011 into Section 5.1 heading.

RESPONSE: Agreed. Text edit will be accepted

RTC 10 Pg 5-1 Section 5.1 Table 4 – Insert 2011 into table title.

RESPONSE: Agreed. Text edit will be accepted.

RTC 11Pg 6-5 Question A – Change question answer from Yes to No.*RESPONSE: Agreed. Text edit will be accepted.*

RTC 12 Pg 6-5 Question A – Edit first sentence to delete contingency from the landfill cap description.

RESPONSE: Agreed. Text edit will be accepted.

RTC 13Pg 6-5 Question A – Add to last sentence of first paragraph "at AOC A7".*RESPONSE: Agreed. Text edit will be accepted.*

RTC 14 Pg 6-5 Question A – Edit second paragraph to the following:

"However, a water supply well (A9WSW) was recently installed for potential recreational/transient use at a seasonal campground location for FWS Interns. The 1997 MOM ROD stated that there was a presumption that no drinking water wells would be installed at AOC A9 for residential use due to transfer to the USFW as a refuge, however, no ICs were implemented to prohibit drinking water wells at AOC A9. Construction details and drinking water analysis were provided by USFWS. Sample results indicated all compounds were below MCLs with the exception of naturally occurring compounds arsenic, iron and manganese. Arsenic was detected at 0.11 mg/L and the MCL is 0.10 mg/L. Iron was detected at 0.52 mg/L and the MCL is 0.3 mg/l and manganese was detected at 0.069 mg/L and the MCL is 0.05 mg/L. The well is not in use at this time and is scheduled to be sampled in August 2016 to confirm these sample results as well as to check for the presence of emerging contaminants."

RESPONSE: Agreed. Text edits will be accepted.

RTC 15 Pg 6-7 Section 6.5.3 Opportunities for Optimization – Add the following to the end of the section:

"An additional optimization recommendation was for a reduction in VOC analysis to include only COPCs. COPCs include: PCE, TCE, 1,1,2,2-tetrachloroethene, cis-1,2-dichloroethene and trans-1,2-dichloroethene.

Also the optimization evaluation recommended to remove metals analyses from the fall 2016 LTM program. The Interstate Technology and Regulator Council (ITRC) guidance for groundwater monitoring module evaluation indicates metals can be removed from the analyte list. ITRC recommends confirmation sampling to be conducted every 5 years until end of post closure care (PCC). Analyte list can be modified per 310 CMR 19.132(1)(H)."

RESPONSE: Agreed. Text edit will be accepted

RTC 16 Pg 6-10 Section 6.7 Recommendations and Follow Up Actions – Revise the section to the following:

1. Implement temporary ICs to ensure the WSW at AOC A9 is not used until a groundwater investigation is completed.

2. Remove Hornet nests in gas vents prior to next sampling round in 2016 and report data in accordance with the LTMMP.

3. The well SUDWP-A7-01will be redeveloped prior to sampling. At that time it should be determined if a new well should be installed at a deeper depth or sampling should occur during times of a higher water table. A technical memo will be submitted with Army's recommendation.

4. Prepare sampling and analysis plan and implement groundwater sampling for emerging contaminants, including perchlorate, 1,4 dioxane and PFAS at AOC A7 and A9 to determine if these contaminants are currently impacting groundwater at AOC7 and A9.

5. Prepare a PA work plan to determine if PFAS had been used, stored, or disposed of at any other areas of the site in addition to AOC7 and A9.

6. Prepare a work plan to evaluate groundwater at AOC A9 and determine if historical impacts above the MCLs are present and if overburden groundwater could affect the USFWS water supply well currently or in the future. If the groundwater exhibits unacceptable risk revise existing ICs to insure that additional water supply wells are not installed in the future

All of these actions that do not affect current protectiveness, but do affect future protectiveness will be accomplished by the Army. The first three actions (1-3) will be completed by March 30, 2017. The last three actions (4-6) will be completed by September 30, 2017.

RESPONSE: Agreed. Text edit will be accepted

RTC 17 Pg 6-11 Section 6.8 Protectiveness Statement – Revise the section to the following:

The remedy at OU1 currently protects human health and the environment because the landfill is capped and the groundwater is not being used as a drinking water supply at any of the AOCs. However, in order for the remedy to be protective in the long term, the following actions need to be taken:

1. Implement temporary ICs to ensure the WSW at AOC A9 is not used until a groundwater investigation is completed.

2. Remove Hornet nests in gas vents prior to next sampling round in 2016 and report data in accordance with the LTMMP.

3. The well SUDWP-A7-01will be redeveloped prior to sampling. At that time it should be determined if a new well should be installed at a deeper depth or sampling should occur during times of a higher water table. A technical memo will be submitted with Army's recommendation.

4. Prepare sampling and analysis plan and implement groundwater sampling for emerging contaminants, including perchlorate, 1,4 dioxane and PFAS at AOC A7 and A9 to determine if these contaminants are currently impacting groundwater at AOC7 and A9..

5. Prepare a PA work plan to determine if PFAS had been used, stored, or disposed of at any other areas of the site in addition to AOC7 and A9.

6. Prepare a work plan to evaluate groundwater at AOC A9 and determine if historical impacts above the MCLs are present and if overburden groundwater could affect the USFWS water supply well currently or in the future. If the groundwater exhibits unacceptable risk revise existing ICs to insure that additional water supply wells are not installed in the future

RESPONSE: Agreed. Text edit will be accepted

Response to EPA Comments on *Fourth Five-Year Review (FYR) Report for the Former Ft. Devens-Sudbury Training Annex (STA);* Letter dated 12 July 2016

GENERAL COMMENTS

1. EPA is not in agreement with the protectiveness statement presented in the Fourth FYR report. The OU 1 & 2 remedy has been called into question due to the unforeseen installation of a potable water supply well at AOC A-9. A more appropriate protectiveness statement would be "Protectiveness Deferred" until such time as more information is known about the contamination at AOC A-9. In addition, EPA has requested and Army has recommended sampling for emerging contaminants, which according to guidance (Memorandum dated September 13, 2012, Subject: Clarifying the Use of Protectiveness Deferred" determination.

Therefore, change the protectiveness statement to read, "A protectiveness determination of the remedy at OUs 1&2 cannot be made at this time until further information is obtained. Further information will be obtained by taking the following actions:

Evaluating the presence of emerging contaminants in the groundwater at both AOC A7 & A9, evaluating the presence of site contaminants at AOC A-9, performing a PA to determine the use, disposal or storage of PFASs across the site, and implementing institutional controls across the site to ensure no further potable supply wells are installed without proper groundwater characterization. It is expected that these actions will take approximately one (1) year to complete, at which time a protectiveness determination will be made."

RESPONSE: Comment noted. Protectiveness statement has been revised to Protectiveness Deferred. A statement will be included that indicates additional sampling related to emerging contaminants will be conducted and that a Preliminary Assessment will be prepared. However, it should be noted that the original impacts at A9 were remediated and a no further action status was approved.

2. Incomplete data from fall 2015 LTM event was also included in this report. The wells that were sampled continued the downward trend of contamination, however well SUDWP-A7-01 was not sampled. The report is also missing data from 2012 to 2015 at landfill gas points. The missing well analysis and gas vents testing must be provided as part of the planned sampling due to the deferred protectiveness of the remedy and must be added to the issues and recommendations for the FYR.

RESPONSE: Comment noted. Well SUDWP-A7-01 did not have sufficient water present to collect a sample in the Fall of 2015. Table 11 has been updated to indicate a sample was not collected. A note was added to the bottom of the table indicating the well was dry.

One Landfill gas point (A7-1) was missing data due to active hornets nests preventing sampling at that time. However the other gas points were sampled. Annual data for landfill gas sampling was included as Tables 12 through 15. A note will be added to clarify the Not Sampled as Not Sampled due to presence of hornets.

SPECIFIC COMMENTS

3. Table 1, change the single issue noted to the several separate issues with separate recommendations noted in comments on section 6.6. The addendum due date of September 2017 is acceptable.

RESPONSE: Comment noted. Issues have been added to Table 1 as follows:

- 1. Contaminants in groundwater at AOC A9 were above MCLs at the time of the 1997 OU2 Management of Migration ROD, the sampling will include VOC, SVOCs, PFCs, Perchlorate, 1,4-dioxane, TPH-DRO and TAL Metals (total). Sampling of the new water supply well at A9 will be conducted in August 2016.
- 2. Per- and Polyfluoroalkyl Substances (PFAS) may have been used at the site. EPA has requested and Army has agreed to perform a preliminary assessment (PA) to determine if PFASs were used, stored, or disposed of across the site.
- 3. The emerging contaminants PFASs & 1,4-dioxane may have been disposed of at AOC A7 and Army has agreed to sample the groundwater at AOC A-7 to determine if they are present.
- 4. Hornet nests in landfill gas standpipes will be removed.
- 5. Well SUDWP-A7-0l contained insufficient water to conduct sampling in 2015. The well will be redeveloped prior to sampling. At that time it should be determined if a new well should be installed at a deeper depth or sampling should occur during times of a higher water table.
- 4. Section 6.2, page 6-1. Please indicate whether or not any comments from the public have been received. Please also provide the Army's responses in an appendix. If none have been received please include a sentence stating, "no substantive comments were received."

RESPONSE: Comment noted. Text has been added stating that no substantive comments were received from the public.

5. Section 6.4.2, first paragraph on page 6-3. Please clarify what FYR the sampling frequency of the LTM wells will be evaluated. Will it be added to this FYR or kept the same until the next FYR in 2021?

RESPONSE: Comment noted. The LTM sampling will be evaluated in the next FYR on 2021. The last sentence in this paragraph has been revised to clarify an evaluation was conducted during this FYR and that another evaluation will be conducted in 2021 as part of the next FYR.

6. Please reconcile section 6.4.2 with section 6.5.3 and the LTMMP section 2 with the LTMMP appendix A.

RESPONSE: Comment noted. Please see response to Comment #5.

7. Section 6.5 Question A. Please re-write this section to state the answer is No. The 1997 MOM ROD stated that there was a presumption that no drinking water wells would be installed at AOC A-9 due to the transfer to the USF&WS as a refuge. While the ROD indicated that there was no DNAPL, there was contamination above MCLs. However, no ICs were implemented to ensure the aquifer was not used as a drinking water aquifer. The remedy is not working as intended at AOC A-9 and therefore the answer to Question A

needs to be re-written to reflect this issue. However, please keep the language concerning the landfill cap, gas ventilation system, and drainage systems which are functioning, but note that the remedy is not working as intended for the reasons stated here.

RESPONSE: Disagree. The remedy at AOC A7 is functioning as intended. It is premature to make assumptions that an ESD for ICs or RAO modifications be implemented without the August sampling results and Preliminary Assessment report conclusions. The remedy at AOC A9 evaluated residential future use to provide a conservative estimate of risk from exposure to site contaminants that were removed and properly disposed of at the RCRA landfill developed at AOC A7. Additionally the installation of a water supply well for potential recreational purposes does not change or undermine the remedy assumptions. It should be noted that residential use implies daily consumption and the potential for daily exposure, whereas as recreational use is limited to a season with limited exposure potential.

Question A has been revised to include the following:

Yes. The contingency landfill cap, gas ventilation system, and drainage system at AOC A7 achieve the RAOs stated in the ROD. ICs continue to prohibit any use of groundwater as drinking water and any undesired use of the land.

The 1997 MOM ROD stated that there was a presumption that no drinking water wells would be installed at AOC A9 for residential use due to transfer to the USFW as a refuge. A water supply well (A9WSW) was recently installed for potential recreational/transient use at a seasonal campground location for FWS Interns. Construction details and drinking water analysis were provided by USFWS. Sample results indicated all compounds were below MCLs with the exception of naturally occurring compounds arsenic, iron and manganese. Arsenic was detected at 0.11 mg/L and the MCL is 0.10 mg/L. Iron was detected at 0.52 mg/L and the MCL is 0.3 mg/l and manganese was detected at 0.069 mg/L and the MCL is 0.05 mg/L. The well is not in use at this time and is scheduled to be sampled in August 2016 to confirm these sample results as well as to check for the presence of emerging contaminants.

8. Section 6.5 Question B. Please re-write this section to state that the answer is No. The 1997 MOM ROD stated that there was a presumption that no drinking water wells would be installed at AOC A-9 due to the transfer to the USF&WS as a refuge. That exposure assumption was found to be wrong during the FYR inspection when a drinking water well was identified at AOC A-9. The RAO should also be updated to prevent consumption of contaminated groundwater. An ESD or a ROD Amendment must be initiated to update the RAOs and create additional institutional controls. Additionally, the changes in some of the exposure assumptions, such as body weight, and toxicity values, such as TCE, would also require an answer of No for this question. It should be stated that some of the exposure assumptions and toxicity values are no longer valid.

RESPONSE: Disagree. As stated previously, it is premature to make assumptions that an ESD for ICs or RAO modifications be implemented without the August 2016 sampling results and Preliminary Assessment conclusions. The exposure assumptions, toxicity data and RAOs used at the time of the remedy are still valid. All impacted soils were removed from A9 and properly disposed at the RCRA landfill installed at A7. Previous reporting indicated A9 was sufficiently remediated and that no further action was required. The remedy assumption that site A9 groundwater will not be used for residential purposed is still valid given the FWS stated potential use of the new well.

The well, which is not in use, is being sampled by Army to determine if its use presents any potential harm to human health. Sampling results provided by FWS for the well (see Response to Comment #7), indicate all compounds were detected below MCL, with the exception of naturally occurring arsenic, iron and manganese.

9. Section 6.5 Question C. Please re-write this section to state the answer is Yes. The Army is aware that a drinking water well was installed at AOC A-9 without knowledge of the current groundwater quality. In addition, the discussion about PFCs should still be included in this section.

RESPONSE: Disagree. It is unknown at this time if any compounds of concern are present. As indicated in the response to comments 7 and 8, additional testing will be required to determine if any emerging contaminants are present that may affect the remedy. The purpose and use of the water supply well needs to be evaluated pending the sample results and conclusions of the Preliminary Assessment report. Please also refer the previous Responses to Comments #7 and #8.

10. Section 6.5.1, top of page 6-6. MW JO-A07-M61 was not gauged in 2015 because the Army couldn't find it. Add a concern of well location and a recommendation of GPS use to locate all of the wells.

RESPONSE: Comment noted. The use of GPS coordinates has been included, the statement added includes:

- Due to heavy brush and undergrowth at monitoring locations located outside of the landfill cap area, GPS will be used to determine well locations.
- 11.Section 6.5.2.1. Army has not sampled landfill gas since 2011. Five years of not sampling gas is unacceptable and not in accordance with the approved 2015 LTMMP. Add an issue of landfill gas not being sampled and a recommendation for removal of Bee Nests from all landfill gas pipes.

RESPONSE: Disagree. Landfill gas has been sampled at one or more sampling vents since 2011 with a few exceptions where active hornets' nests were found. See response to Specific Comment #2 above. A recommendation has been added.

12. Section 6.5.3. This section corresponds with EPA's understanding that well OHM-A7-51 would be sampled in the fall of 2015. However, there is no data for this well included in Table 11.

RESPONSE: Comment noted. Well OHM-A7-51 was removed from the LTM sample list in the 2015 LTMMP (See section 2.1.8.2 and Table 3.8 of the 2015 LTMMP).

13. Section 6.5.5, bottom on page 6-7. Define OE and include definition in Acronym Table.

RESPONSE: Comment noted. The term will be defined and included in the Acronym Table.

14. Section 6.5.5, top of page 6-8. Define MEC and include definition in Acronym Table.

RESPONSE: Comment noted. The term will be defined and included in the Acronym Table.

15. Section 6.5.6 should be modified. Some of the exposure assumptions and toxicity data have changed since the remedy was implemented, which means they are no longer valid. Any changes should be evaluated in this section with regard to their potential effect on remedy

protectiveness. Additionally, as stated above the RAOS are not being met because a drinking water well was installed at AOC A-9. An ESD or ROD amendment must be initiated to update the RAOs and create additional institutional controls. The RAOs should be updated to prevent the consumption of contaminated groundwater. In addition, Army could still state in this section that the landfill cap, gas ventilation system, and drainage system are functioning properly. Army should also include the current language about evaluation of PFCs in this section.

RESPONSE: Disagree. The RAO's related to A7 are operating as intended. The water supply well is being evaluated as indicated previously. See Response to Comments #7, #8 and #9. Pending the sampling results being conducted by the Army in August 2016 and the Preliminary Assessment results, a determination will be made at that time if the RAO's are not being met. It is premature to make assumptions than ESD for ICs or RAO modifications be implemented without the August sampling results and Preliminary Assessment conclusions. In addition, the status of this FYR is protectiveness deferred until the results of the PA and the additional sampling are conducted.

- 16. Please change the statement in section 6.6 to acknowledge the following issues that affect future protectiveness.
 - 1. Contaminants in groundwater at AOC A9 were above MCLs at the time of the 1997 OU2 Management of Migration ROD but no institutional controls for AOC A-9 were included in the remedy nor was monitoring included in the ROD for AOC A-9. The Army's recommendation to sample the groundwater at AOC A9 is agreed with. If contamination is found above risk levels, an ESD or ROD Amendment to include monitoring and institutional controls to prohibit groundwater use for a drinking water source until either well head treatment is installed or contamination has attenuated at A-9 or the well will need to be abandoned.
 - 2. Per- and Polyfluoroalkyl Substances (PFAS) may have been used at the site. EPA has requested and Army has agreed to perform a preliminary assessment (PA) to determine if and where PFASs were used, stored, or disposed of across the site. Please provide a schedule for the PA.
 - 3. The emerging contaminants PFASs & 1,4-dioxane may have been disposed of at AOC A7 and Army has agreed to sample the groundwater at AOC A-7 to determine if they are present.
 - 4. Landfill gas sampling has not been performed since 2011 due to hornet nests in the standpipes. Nests must be removed and landfill gas must be sampled during the fall 2016 sampling event.
 - 5. Well SUDWP-A7-01 went dry during sampling event in 2015. Either a new well should be installed at a deeper depth or sampling should occur during times of a higher water table (spring).

RESPONSE: Disagree with a portion of comment 1 and all of comment 4. Sampling has been conducted. See Tables 12 through 15. Removal of hornets nests has been included. The following items are added to Section 6.6.

1. Contaminants in groundwater at AOC A9 were above MCLs at the time of the 1997 OU2 Management of Migration ROD, the sampling will include VOC, $SVOCs_{5}$

PFCs, Perchlorate, 1,4-dioxane, TPH-DRO and TAL Metals (total). Sampling of the new water supply well at A9 will be conducted in August 2016.

2. Per- and Polyfluoroalkyl Substances (PFAS) may have been used at the site. EPA has requested and Army has agreed to perform a preliminary assessment (PA) to determine if PFASs were used, stored, or disposed of across the site.

3. The emerging contaminants PFASs & 1,4-dioxane may have been disposed of at AOC A7 and Army has agreed to sample the groundwater at AOC A-7 to determine if they are present.

4. Hornet nests in landfill gas standpipes will be removed.

5. Well SUDWP-A7-0l contained insufficient water to conduct sampling in 2015. The well will be redeveloped prior to sampling. At that time it should be determined if a new well should be installed at a deeper depth or sampling should occur during times of a higher water table.

17. Section 6.6 and 6.7. There are several issues that affect protectiveness at the Former Sudbury Training Annex that EPA has listed above, please include the issue noted and the recommendations requested above. Include these in the table at the front of the document.

RESPONSE: Comment noted. Table 1 has been updated to include the noted issues. Please note, per the 2015 LTMMP, landfill gas monitoring will be conducted every 5 years and included with the FYR. The next landfill gas sampling will occur in 2021.

18. The Recommendation Section 6.7 of the FYR recommends several of the same recommendations as were proposed in the 2015 final LTMMP, however, a new recommendation to only report COPCs in the VOC analysis was included. There was no justification for this new recommendation nor was a list of COPCs referenced. The other FYR LTMP change recommendations, which EPA agrees with, had been evaluated in the Appendix A of the final 2015 LTMMP. Provide a justification for the reporting of only COPCs and what contaminants are proposed to be reported.

RESPONSE: Comment noted. Bullets 2 and 3 were removed. Suggested COPCs include: PCE, TCE, 1,1,2,2-tetrachloroethene, cis-1,2-dichloroethene and trans-1,2-dichloroethene. These compounds have been detected consistently over the years.

19. Section 6.8, please change the protectiveness statement to be consistent with the first comment.

RESPONSE: Comment noted. The protectiveness statement has been revised.

20. The OSI Mann-Kendal Toolkit has no sampling date labels for 4,4' -DDD. Please include.

RESPONSE: Comment noted. Figure revised.

21. Picture 8 of the Landfill Photograph has ripped geotextile as noted in the picture description. This is not noted in the inspection & Maintenance Check List. Please include and provide a recommendation to repair.

RESPONSE: Comment noted. This has been added to the Inspection Checklist and added to the repairs scheduled to be completed.

Response to David Chaffin Comments on the 2016 Five Year Review Report for Former Sudbury Training Annex, received June 13, 2016:

1. Section 1.0: As noted here, five-year reviews are required for all sites where hazardous substances, pollutants, or contaminants remain above levels that allow for unrestricted use. Accordingly, the five-year review report should identify and review all of the sites on the former Sudbury Annex property where hazardous substances, pollutants, or contaminants remain above levels that allow for unrestricted use. In particular, the report should include a separate review of AOC A9, where hazardous substances, pollutants, and contaminants including chlorinated solvents and petroleum constituents with concentrations exceeding unrestricted levels remained following completion of remedial actions (e.g., refer to September 1997 ROD).

RESPONSE: Comment noted. The data gap investigation conducted in 1996 at AOC A9 verified that a DNAPL plume was not present in soils at AOC A9 and that concentrations of dissolved solvents in groundwater samples collected in June 1996 were consistent or less than concentrations previously reported for the site. The 1997 Final Technical Memorandum for AOC A9 concluded that groundwater contamination at AOC A9 posed no significant ecological risks. It also stated that groundwater contamination did not pose a human-health risk, at that time and recommended no further action at AOC A9. The ROD specifically sates that FYRs for AOC A9 would not be performed. Therefore a five year review is not warranted at AOC A9.

2. Section 3.1, Second Paragraph: Please confirm/correct statements indicating that AOC A9 contained a rail yard maintenance area, pesticide storage area, and ammunition disposal area.

RESPONSE: Comment noted. The information was obtained from previous reports and has been confirmed.

3. Section 4.1, Third to Last Paragraph: Text should be clarified to indicate that the cited prohibition against drinking water use only applies to AOC A7. The Army-FWS MOA (Appendix G) did not impose a groundwater use restriction on AOC A9.

RESPONSE: Comment noted. The text has been clarified to show the prohibition against drinking water pertains to AOC A7.

4. Section 6.5: For AOC A9, the answer to Question A (Is the remedy functioning as intended?) should be NO. The September 1997 ROD is based on the assumption that groundwater at AOC A9 would not be used as a drinking water source. The recent installation of a potable water well at AOC A9 (Section 6.4.4) is inconsistent with this assumption.

RESPONSE: Disagree. The remedy at AOC A7 is functioning as intended. Per the MOM ROD Remedy a FYR is not required for AOC A9. See response to EPA Comment #7.

5. Section 6.5: For AOC A9, the answer to Question B (Are the exposure assumptions...still valid?) should be NO. The September 1997 ROD is based on the assumption that groundwater at AOC A9 would not be used as a drinking water source. The recent installation of a potable water well at AOC A9 (Section 6.4.4) is inconsistent with this assumption.

RESPONSE: Comment noted. See response to EPA comment #7, 8 and 9.
6. Section 6.5, Question C (Has other information come to light that could call into question the protectiveness of the remedy?): In addition to noting the potential presence of emerging contaminants (PFCs, perchlorate, and 1,4-dioxane), the answer to Question C should note the recent installation of a potable water well at AOC A9 (Section 6.4.4). The installation of a potable water supply well at a site where groundwater contaminant levels may exceed drinking water standards certainly calls the protectiveness of the remedy into question.

RESPONSE: Comment noted. The response to Question C has been revised accordingly to address the AOC A9 well. See response to EPA Comment #7, 8 and 9.

7. Sections 6.5.4, 6.5.5, 6.5.6, and 6.6: As outlined in preceding comments, text should be revised to indicate that there are early indications of remedy failure at AOC A9, to note that institutional controls reflecting the assumption that that drinking water would not be drawn from AOC A9 have not been imposed, to note that the remedy for AOC A9 is not performing as intended, and to identify these problems as issues that affect the protectiveness of the AOC A9 remedy.

RESPONSE: Comment noted. The text has been updated to discuss the installation of the water supply well at AOC A9. See Response to EPA Comments #7, 8 and 9.

8. Figure 1: Please: (1) add a note to explain the distinction between "A" sites and "P" sites, and (2) identify all sites where hazardous substances, pollutants, or contaminants remain above levels that allow for unrestricted use.

RESPONSE: Comment noted. Documentation regarding the naming justification of A sites and P sites was not located in historical documentation. As such Figure 1 was revised to indicate the locations of A7 and A9 using current GIS maps.

9. Appendix B.2: Please add interview dates to the questionnaires that do not have interview dates, and delete the first sentence from the USACE representative's questionnaire.

RESPONSE: Comment noted. Questionnaires have been updated with interview dates.