

APPENDIX C

AOCS 43G&J

Table 1
 Groundwater Analytical Results - December 13 - 14, 1999 Sampling Event
 AOC 43 G
 Devens, Massachusetts
 (SHEET 1 of 1)

PARAMETERS	Well No.	AAFES-2	AAFES-2 DUP	AAFES-5	AAFES-6	XGM-93-02X	XGM-94-04X	XGM-94-07X	XGM-94-08X	XGM-94-10X	XGM-97-12X
	CLEANUP LEVEL (1)	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
VOLATILES (8260)	ug/L										
Methyl-t-Butyl Ether	70 (3)	<20	<20	0.81 J	<2.0	8.6 J	<2.0	<2.0	<2.0	<2.0	<2.0
Benzene	5 (2)	62	62	<2.0	2.5	81	0.61 J	<2.0	<2.0	<2.0	270
Toluene	1,000 (4)	8.2 J	7.1 J	<2.0	<2.0	6.6 J	1.1 J	<2.0	<2.0	<2.0	390
Ethylbenzene	700 (4)	320	310	<2.0	<2.0	260	30	<2.0	<2.0	<2.0	290
m,p-Xylene		800	770	<2.0	<2.0	220	<2.0	<2.0	<2.0	<2.0	640
o-Xylene		260	270	<2.0	<2.0	84	0.67 J	<2.0	<2.0	<2.0	410
Total Xylenes	10,000(2)	1,060	1,040	<2.0	<2.0	304	0.67 J	<2.0	<2.0	<2.0	1,050
Naphthalene	20 (4)	170	260	<2.0	<2.0	110	2.2 B	<2.0	<2.0	<2.0	120
VPH											
Aliphatic Hydrocarbons											
C5 - C8	400 (4)	<1,000	<1,000	<100	370	<1,000	<100	<100	120	<100	970
C9 - C12	4,000 (4)	<250	<250	<25	<25	<250	<25	<25	<25	<25	96
Aromatic Hydrocarbons											
C9 - C10	200 (4)	9,400	9,000	<25	170	510	200	<25	<25	<25	4,500
METALS (6010)											
Iron	9,100	24,000	28,000	25 JB	11,000	30,000	5,500	3,500	4,800	510 B	32,000
Manganese	291	4,600	5,100	710	2,900	3,900	2,900	5,700	4,500	830	6,300
Nickel	100 (4)	<40	9.2 J	11 J	<40	<40	12 J	26 J	<40	<40	19 J

Notes:

Shaded areas with bold numbers indicate cleanup level exceedance. -

25

J = Estimated value detected below the PQL

B = Analyte is within 5 times of the amount detected in the equipment blank sample

(1) Cleanup values as developed in the ROD (unless otherwise noted)

(2) No cleanup values were developed so the Maximum Contamination Levels (MCLs) were used

(3) No cleanup values were developed so the MMCLs were used

(4) No cleanup values were developed so the MCP GW-1 standard was used

Table 2
Groundwater Analytical Results - December 15 - 16, 1999 Sampling Event
AOC 43 J
Devens, Massachusetts
(SHEET 1 of 1)

PARAMETERS	Well No.	2446-02	2446-02 Dup	2446-03	2446-04	XJM-93-02X	XJM-93-03X	XJM-94-05X	XJM-94-06X	XJM-94-08X	XJM-94-10X	XJM-97-11X	XJM-97-12X	XJM-97-13X
	CLEANUP LEVEL (1)	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	ug/L													
VOLATILES (8260B)														
Methyl-t-Butyl Ether	70 (3)	<20	<20	<20	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Benzene	5 (2)	34	38	<20	4.2	22	<2.0	16	<2.0	<2.0	<2.0	<2.0	27	<2.0
Toluene	1,000 (4)	2,400	2,700	91	16	0.75 J	<2.0	66	<2.0	<2.0	<2.0	1.0 J	180	<2.0
Ethylbenzene	700 (4)	2,500	2,800	780	7.7	1.2 J	<2.0	150	<2.0	<2.0	<2.0	2.4	620	<2.0
m,p-Xylene		4,600	4,900	320	29	1.5 JB	<2.0	470	<2.0	<2.0	<2.0	3.2 B	940	<2.0
o-Xylene		2,900	2,900	180	13	0.77 J	<2.0	110	<2.0	<2.0	<2.0	1.2 J	31	<2.0
Total Xylenes	10,000(2)	7,500	7,800	500	42	2.27 J	<2.0	580	<2.0	<2.0	<2.0	4.4 J	971	<2.0
Naphthalene	20 (4)	490	370	140	15	3.1	<2.0	66	<2.0	<2.0	<2.0	1.8 J	110	<2.0
VPH														
Aliphatic Hydrocarbons														
C5 - C8	400(4)	2,800	2,700	<1,000	<100	120	<100	240	<100	<100	<100	110	2,100	<100
C9 - C12	4,000(4)	<250	<250	<250	<25	<25	<25	27	<25	<25	<25	<25	<250	<25
Aromatic Hydrocarbons														
C9 - C10	200(4)	7100	7,800	3,600	430	110	<25	1,200	<25	<25	<25	33	4,400	<25
METALS (6010)														
Arsenic	50 (4)	80	78	69.0	17 J	<25	<25	32	<25	<25	6.7 J	<25	64	<25
Iron	9,100	33,000	33,000	33,000	7,600	490 B	670 B	13,000	1,300	68 JB	680 B	80 JB	16,000	47 JB
Manganese	291	17,000	17,000	11,000	8,400	3,100	110	6,400	64	640	330	300	6,400	44

Notes:

Shaded areas with bold numbers indicate cleanup level exceedance. -

J = Estimated value detected below the PQL

B = Analyte is within 5 times of the amount detected in the equipment blank sample

25

(1) Cleanup values as identified in the ROD (unless otherwise noted)

(2) No cleanup values were developed so the Maximum Contamination Level (MCLs) were used

(3) No cleanup values were developed so the MMCLs were used

(4) No cleanup values were developed so the MCP GW-1 standard was used

TABLE 10
SYNOPSIS OF FEDERAL AND STATE ARARS FOR ALTERNATIVE 2A:
INTRINSIC BIOREMEDIATION
AOC 43G - HISTORIC GAS STATION G/AAFES GAS STATION

RECORD OF DECISION
FORT DEVENS, MA

AUTHORITY	LOCATION SPECIFIC	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTION TO BE TAKEN TO ATTAIN REQUIREMENT
Federal Regulatory Authority		No location-specific ARARs will be triggered.			
State Regulatory Authority		No location-specific ARARs will be triggered.			

TABLE 10
SYNOPSIS OF FEDERAL AND STATE ARARS FOR ALTERNATIVE 2A:
INTRINSIC BIOREMEDIATION
AOC 43G - HISTORIC GAS STATION G/AAFES GAS STATION

RECORD OF DECISION
FORT DEVENS, MA

AUTHORITY	CHEMICAL SPECIFIC	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTION TO BE TAKEN TO ATTAIN REQUIREMENT
Federal Regulatory Authority	Groundwater (Also applicable as an Action Specific ARAR)	SDWA, National Primary Drinking Water Standards, MCLs [40 CFR Parts 141.11 - 141.16 and 141.50 - 141.52]	Relevant and Appropriate	The NPDWR establishes MCLs for several common organic and inorganic contaminants. MCLs specify the maximum permissible concentrations of contaminants in public drinking water supplies. MCLs are federally enforceable standards based in part on the availability and cost of treatment techniques.	Biodegradation of organic contaminants exceeding MCLs is believed to be occurring under existing conditions. MCLs will be used to evaluate the performance of this alternative through implementation of a long-term groundwater monitoring program will achieve MCLs at completion of remedy.
Federal Regulatory Authority	Groundwater	USEPA Reference Dose	TBC		
Federal Regulatory Authority	Groundwater	USEPA HAs	TBC		

TABLE 10
SYNOPSIS OF FEDERAL AND STATE ARARS FOR ALTERNATIVE 2A:
INTRINSIC BIOREMEDIATION
AOC 43G - HISTORIC GAS STATION G/AAFES GAS STATION

RECORD OF DECISION
FORT DEVENS, MA

AUTHORITY	CHEMICAL SPECIFIC	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTION TO BE TAKEN TO ATTAIN REQUIREMENT
	Groundwater (Also applicable as an Action Specific ARAR)	Massachusetts Drinking Water Standards and Guidelines [310 CMR 22.0].	Relevant and Appropriate	The Massachusetts Drinking Water Standards and Guidelines list MMCLs which apply to water delivered to any user of a public water supply system as defined in 310 CMR 22.00. Private residential wells are not subject to the requirements of 310 CMR 22.00; however, the standards are often used to evaluate private residential contamination especially in CERCLA activities.	Biodegradation of organic contaminants exceeding MMCLs is believed to be occurring under existing conditions. MMCLs will be used to evaluate the performance of this alternative through implementation of a long-term groundwater monitoring program.

(continued)

TABLE 10
SYNOPSIS OF FEDERAL AND STATE ARARS FOR ALTERNATIVE 2A:
INTRINSIC BIOREMEDIATION
AOC 43G - HISTORIC GAS STATION G/AAFES GAS STATION

RECORD OF DECISION
FORT DEVENS, MA

AUTHORITY	ACTION SPECIFIC	REQUIREMENTS	STATUS	REQUIREMENT SYNOPSIS	ACTION TO BE TAKEN TO ATTAIN REQUIREMENT
Federal Regulatory Authority		RCRA Subtitle C Subpart F	Relevant and Appropriate	Groundwater protection standard.	
State Regulatory Authority	Groundwater	Massachusetts Groundwater Quality Standards [314 CMR 6.00]	Applicable	Massachusetts Groundwater Quality Standards designate and assign uses for which groundwater of the Commonwealth shall be maintained and protected and set forth water quality criteria necessary to maintain the designated uses. Groundwater at Fort Devens is classified as Class 1. Groundwater assigned to this class are fresh groundwater designated as a source of potable water supply.	Biodegradation of organic contaminants exceeding MMCLs is believed to be occurring under existing conditions. MMCLs will be used to evaluate the performance of this alternative through implementation of a long-term groundwater monitoring program.

(continued)

TABLE 10
SYNOPSIS OF FEDERAL AND STATE ARARS FOR ALTERNATIVE 2A:
INTRINSIC BIOREMEDIATION
AOC 43G - HISTORIC GAS STATION G/AAFES GAS STATION

RECORD OF DECISION
FORT DEVENS, MA

AUTHORITY	ACTION SPECIFIC	REQUIREMENTS	STATUS	REQUIREMENT SYNOPSIS	ACTION TO BE TAKEN TO ATTAIN REQUIREMENT
State Regulatory Authority	Groundwater Monitoring	Massachusetts Hazardous Waste Management Rules (MHWMR) Groundwater Protection; [310 CMR 30.660-30.679]	Relevant and Appropriate	Groundwater monitoring is required during and following remedial actions.	A long-term groundwater monitoring program is to be implemented to monitor the progress of remediation.

Notes:

CERCLA = Comprehensive Environmental Response, Compensation and Liability Act
MCLs = Maximum Contaminant Levels
MHWMR = Massachusetts Hazardous Waste Management Rules

MMCLs = Massachusetts Maximum Contaminant Levels
NPDWR = National Primary Drinking Water Standards
SDWA = Safe Drinking Water Act

TABLE 11
SYNOPSIS OF FEDERAL AND STATE ARARs FOR ALTERNATIVE 2B:
INTRINSIC BIOREMEDIATION
AOC 43G - HISTORIC GAS STATION G/AAFES GAS STATION

RECORD OF DECISION
FORT DEVENS, MA

AUTHORITY	LOCATION SPECIFIC	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTION TO BE TAKEN TO ATTAIN REQUIREMENT
Federal Regulatory Authority		No location-specific ARARs will be triggered.			
State Regulatory Authority		No location-specific ARARs will be triggered.			

TABLE 11
 SYNOPSIS OF FEDERAL AND STATE ARARS FOR ALTERNATIVE 2B:
 INTRINSIC BIOREMEDIATION
 AOC 43G - HISTORIC GAS STATION G/AAFES GAS STATION

RECORD OF DECISION
 FORT DEVENS, MA

AUTHORITY	CHEMICAL SPECIFIC	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTION TO BE TAKEN TO ATTAIN REQUIREMENT
Federal Regulatory Authority	Groundwater (Also applicable as an Action Specific ARAR)	SDWA, National Primary Drinking Water Standards, MCLs [40 CFR Parts 141.11 - 141.16 and 141.50 - 141.52]	Relevant and Appropriate	The NPDWR establishes MCLs for several common organic and inorganic contaminants. MCLs specify the maximum permissible concentrations of contaminants in public drinking water supplies. MCLs are federally enforceable standards based in part on the availability and cost of treatment techniques.	Biodegradation of organic contaminants exceeding MCLs is believed to be occurring under existing conditions. MCLs will be used to evaluate the performance of this alternative through implementation of a long-term groundwater monitoring program will achieve MCLs at completion of remedy.
Federal Regulatory Authority	Groundwater	USEPA Reference Dose	TBC		
Federal Regulatory Authority	Groundwater	USEPA HAs	TBC		

TABLE 11
SYNOPSIS OF FEDERAL AND STATE ARARS FOR ALTERNATIVE 2B:
INTRINSIC BIOREMEDIATION
AOC 43G - HISTORIC GAS STATION G/AAFES GAS STATION

RECORD OF DECISION
FORT DEVENS, MA

AUTHORITY	CHEMICAL SPECIFIC	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTION TO BE TAKEN TO ATTAIN REQUIREMENT
Continued	Groundwater (Also applicable as an Action Specific ARAR)	Massachusetts Drinking Water Standards and Guidelines [310 CMR 22.0].	Relevant and Appropriate	The Massachusetts Drinking Water Standards and Guidelines list MMCLs which apply to water delivered to any user of a public water supply system as defined in 310 CMR 22.00. Private residential wells are not subject to the requirements of 310 CMR 22.00; however, the standards are often used to evaluate private residential contamination especially in CERCLA activities.	Biodegradation of organic contaminants exceeding MMCLs is believed to be occurring under existing conditions. MMCLs will be used to evaluate the performance of this alternative through implementation of a long-term groundwater monitoring program.

TABLE 11
SYNOPSIS OF FEDERAL AND STATE ARARS FOR ALTERNATIVE 2B:
INTRINSIC BIOREMEDIATION
AOC 43G - HISTORIC GAS STATION G/AAFES GAS STATION

RECORD OF DECISION
FORT DEVENS, MA

AUTHORITY	ACTION SPECIFIC	REQUIREMENTS	STATUS	REQUIREMENT SYNOPSIS	ACTION TO BE TAKEN TO ATTAIN REQUIREMENT
	Disposal of treatment residues	RCRA, Land Disposal Restrictions [40 CFR 268]	Applicable	Land disposal of RCRA hazardous wastes without specified treatment is restricted. LDRs require that wastes must be treated either by a treatment technology or to a specific concentration prior to disposal in a RCRA Subtitle C permitted facility.	SVE carbon would be tested to evaluate characteristics for proper disposal/reactivation.

TABLE 11
SYNOPSIS OF FEDERAL AND STATE ARARS FOR ALTERNATIVE 2B:
INTRINSIC BIOREMEDIATION
AOC 43G - HISTORIC GAS STATION G/AAFES GAS STATION

RECORD OF DECISION
FORT DEVENS, MA

AUTHORITY	ACTION SPECIFIC	REQUIREMENTS	STATUS	REQUIREMENT SYNOPSIS	ACTION TO BE TAKEN TO ATTAIN REQUIREMENT
	Groundwater	Massachusetts Groundwater Quality Standards [314 CMR 6.00]	Applicable	Massachusetts Groundwater Quality Standards designate and assign uses for which groundwater of the Commonwealth shall be maintained and protected and set forth water quality criteria necessary to maintain the designated uses. Groundwater at Fort Devens is classified as Class 1. Groundwater assigned to this class are fresh groundwater designated as a source of potable water supply.	Biodegradation of organic contaminants exceeding MMCLs is believed to be occurring under existing conditions. MMCLs will be used to evaluate the performance of this alternative through implementation of a long-term groundwater monitoring program.
State Regulatory Authority	Groundwater Monitoring	Massachusetts Hazardous Waste Management Rules (MHWMR) Groundwater Protection; [310 CMR 30.660-30.679]	Relevant and Appropriate	Groundwater monitoring is required during and following remedial actions.	A long-term groundwater monitoring program is to be implemented to monitor the progress of remediation.

TABLE 11
SYNOPSIS OF FEDERAL AND STATE ARARS FOR ALTERNATIVE 2B:
INTRINSIC BIOREMEDIATION
AOC 43G - HISTORIC GAS STATION G/AAFES GAS STATION

RECORD OF DECISION
FORT DEVENS, MA

AUTHORITY	ACTION SPECIFIC	REQUIREMENTS	STATUS	REQUIREMENT SYNOPSIS	ACTION TO BE TAKEN TO ATTAIN REQUIREMENT
Continued	SVE Treatment	Massachusetts Air Pollution Control Regulations [310 CMR 6.00 - 7.00]	Applicable	SVE system must reduce VOCs in air effluent stream by at least 95% by weight.	Emissions will be managed through engineering controls.

Notes:

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MHWMR = Massachusetts Hazardous Waste Management Rules
MMCLs = Massachusetts Maximum Contaminant Levels
NPDWR = National Primary Drinking Water Standards
SDWA = Safe Drinking Water Act

TABLE 12
SYNOPSIS OF FEDERAL AND STATE ARARS FOR ALTERNATIVE 2:
INTRINSIC BIOREMEDIATION
AOC 43J - HISTORIC GAS STATION J

RECORD OF DECISION
FORT DEVENS, MA

AUTHORITY	LOCATION SPECIFIC	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTION TO BE TAKEN TO ATTAIN REQUIREMENT
Federal Regulatory Authority		No location-specific ARARs will be triggered.			
State Regulatory Authority		No location-specific ARARs will be triggered.			

TABLE 12
SYNOPSIS OF FEDERAL AND STATE ARARS FOR ALTERNATIVE 2:
INTRINSIC BIOREMEDIATION
AOC 43J - HISTORIC GAS STATION J

RECORD OF DECISION
FORT DEVENS, MA

AUTHORITY	CHEMICAL SPECIFIC	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTION TO BE TAKEN TO ATTAIN REQUIREMENT
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Federal Regulatory Authority	Groundwater	USEPA Reference Dose	TBC		
Federal Regulatory Authority	Groundwater	USEPA HAs/TBC	TBC		

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INTRINSIC BIOREMEDIATION
AOC 43J - HISTORIC GAS STATION J

RECORD OF DECISION
FORT DEVENS, MA

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(continued)

TABLE 12
SYNOPSIS OF FEDERAL AND STATE ARARS FOR ALTERNATIVE 2:
INTRINSIC BIOREMEDIATION
AOC 43J - HISTORIC GAS STATION J

RECORD OF DECISION
FORT DEVENS, MA

AUTHORITY	ACTION SPECIFIC	REQUIREMENTS	STATUS	REQUIREMENT SYNOPSIS	ACTION TO BE TAKEN TO ATTAIN REQUIREMENT
Federal Regulatory Authority		RCRA Subtitle C Subpart F	Relevant and Appropriate	Groundwater protection standards.	
	Groundwater	Massachusetts Groundwater Quality Standards [314 CMR 6.00]	Applicable	Massachusetts Groundwater Quality Standards designate and assign uses for which groundwater of the Commonwealth shall be maintained and protected and set forth water quality criteria necessary to maintain the designated uses. Groundwater at Fort Devens is classified as Class 1. Groundwater assigned to this class are fresh groundwater designated as a source of potable water supply.	Biodegradation of organic contaminants exceeding MMCLs is believed to be occurring under existing conditions. MMCLs will be used to evaluate the performance of this alternative through implementation of a long-term groundwater monitoring program.

(continued)

TABLE 12
SYNOPSIS OF FEDERAL AND STATE ARARS FOR ALTERNATIVE 2:
INTRINSIC BIOREMEDIATION
AOC 43J - HISTORIC GAS STATION J

RECORD OF DECISION
FORT DEVENS, MA

AUTHORITY	ACTION SPECIFIC	REQUIREMENTS	STATUS	REQUIREMENT SYNOPSIS	ACTION TO BE TAKEN TO ATTAIN REQUIREMENT
State Regulatory Authority	Groundwater Monitoring	Massachusetts Hazardous Waste Management Rules (MHWMR) Groundwater Protection; [310 CMR 30.660-30.679]	Relevant and Appropriate	Groundwater monitoring is required during and following remedial actions.	A long-term groundwater monitoring program is to be implemented to monitor the progress of remediation.

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