

MMR Treatment Systems Shut Down

Site	FFA Milestone	Start Date	End Date	Duration of Operation (years) A	Type of System	Number of Extraction Wells B	Number of ReInjection Wells B	Original Design Treatment Rate (gpm/cfm)	Treatment Rate (MGD)	Volume Treated (MG) C	Solvents Removed (lbs) C	Fuels Removed (lbs) C
CS-4 Original	NA	3-Nov-93	27-May-03	23	ETI	13	Infiltration trenches	55	0.1	663.20	10.2	NA
CS-10 Source	NA	6-Feb-02	18-Apr-05	-3	SVE	3 SVE	0	SVE-87 cfm	NA	NA	5.4	NA
CS-10 Recirculating Well Pilot Test Site - North		21-Dec-96	4-May-99	-2.5	UVB recirculating	2	2	120	0.2	149.30	93.5	NA
CS-10 Recirculating Well Pilot Test Site - South	NA	21-Dec-96	4-May-99	-2.5	NoVOCs recirculating	2	2	300	0.4	373.25	217.8	NA
FS-12 Source	NA	23-Oct-95	25-Feb-98	-2.5	AS/SVE	24 SVE	24 AS	2500 cfm	NA	NA	NA	44579.0
FS-12 Source	NA	23-Jan-96	9-Feb-96	2 weeks	free product recovery	14	0	NA	NA	NA	NA	487.5
LF-2/FTA-2 Source	8-Oct-01	5-Sep-01	20-Mar-03	-1.5	BS/SVE	3 SVE	12 BS	BS-71cfm; SVE-123 cfm	NA	NA	NA	127.4
SD-5 Source	NA	20-Aug-02	25-Mar-03	-0.5	SVE	2 SVE	0	SVE-172 cfm	NA	NA	4.9	NA
SD-5N	6-Aug-97	4-Aug-97	28-Aug-03	6	ETR	10	8	0	0.0	603.80	11.3	28.5
SD-5S Recircs	22-Jun-99	17-Jun-99	9-Apr-03	4	Recircs	2 Recircs	NA	0	0.0	154.80	7.3	NA
SD-5S EW	31-Jan-00	22-Jan-00	25-Feb-04	4	ETI	1	Used SRTF	100/150	0.1/0.2	289.64	6.1	NA
Total								NA	NA	2233.99	356.4	45222.4

MMR Treatment Systems in Operation

Site	FFA Milestone	Start Date	Projected End Date	Duration of Operation (years) A	Type of System	Number of Extraction Wells B	Number of ReInjection Wells B	Current Treatment Rate (gpm)	Treatment Rate (MGD)	Volume Treated (MG) C	Solvents Removed (lbs) C	Fuels Removed (lbs) C
PFSA Source	8-Oct-01	2-Oct-01	2010	-8	BS/SVE	29 SVE (0)	54 BS	BS-59 cfm; SVE-0 cfm	NA	NA	NA	640.9
Ashumet Valley	29-Nov-99	22-Nov-99	2015	21	ETI	3 (1)	2 Infiltration trenches 1 bubbler to Backus River	350	0.5	4724.00	645.1	NA
Ashumet Valley Leading Edge	NA	24-Aug-09	2012	13	ETD	1		175	0.3	7.00	0.1	NA
CS-10 Sandwich Road(F)	31-May-99	18-May-99	>2055	>55	ETR	9 (6)	6	410	0.6	4150.00	1062.0	NA
CS-10 In Plume and Southern/Southwest	28-Jun-99 30-Apr-00	24-Jun-99 27-Apr-00	>2055	>55	ETI	9	Infiltration trenches + 1 RW	2370	3.4	13266.00	4188.8	NA
CS-10 Northern Lobe	31-Jan-00	22-Jan-00	2015	15	ETR	1	Use SRTF	175	0.3	955.50	244.3	NA
CS-10 Southern Trench(F)	NA	2/20/2009*	2029	20	ETR	1	1	290	0.4	TBD	TBD	NA
FS-1	10 Oct 03	30 Sep 03	2020	27	ET/Surface	4 (3)	Bubbler discharge to Quashnet River	515	0.7	3239.30	NA	17.6
FS-12	24-Sep-97	18-Sep-97	2045	48	ETR	26 (4)	22 (20)	360	0.5	4039.00	NA	377.7
FS-28	NA	14-Oct-97 06-Apr-99	2047	50	ET/Surface	EW-1 (550) 19/204 SWPs(100) EW-2 (50)	Bubbler discharge to Coonamessett River	700	1.0	4225.88	NA	14.5
LF-1	15-Sep-99	26-Aug-99	2044	45	ETI	4	1	595	0.9	3217.00	589.4	NA
LF-1 EW2/EW6 and CS-23 EW7/EW8	NA	5-Dec-06	2019	13	ETI	4	2 Infiltration trenches	1350	1.9	1779.00	201.6	NA
CS-4 Current (D)	NA	28-Nov-05	2012	7	ETI	3	2 Infiltration trenches	398	0.6			NA
CS-20 (D)	NA	11-Jan-06	2016	10	ETI	2	4	773	1.1	3122.80	123.2	NA
CS-21 (E)	NA	Oct-06	2013	7	ETR	4	3	1395	2.0			NA
FS-29 (E)	NA	Oct-06	2013	7	ETR	2 (1)	2	224	0.3	2663.00	117.0	See solvents
Total								10080	14.5	45388.48	7171.5	1050.7

MMR Treatment Systems Under Construction

Site	FFA Milestone	Start Date	End Date	Duration of Operation (years) A	Type of System	Number of Extraction Wells	Number of ReInjection Wells	Proposed Treatment Rate (gpm)	Treatment Rate (MGD)	Volume Treated (MG) B	Solvents Removed (lbs) B	Fuels Removed (lbs) B

Future MMR Treatment Systems

Site	FFA Milestone	Start Date (estimated)	End Date (Estimated)	Duration of Operation (years) A	Type of System	Number of Extraction Wells	Number of ReInjection Wells	Proposed Treatment Rate (gpm)	Design Treatment Rate (MGD)	Volume Treated (MG) B	Solvents Removed (lbs) B	Fuels Removed (lbs) B

A = Estimated based on startup date
B = Design (Actual)
C = Through Sep 2009
D = Mass removals/volume treated data for CS-4 and CS-20
E = Mass removals/volume treated data for CS-21 and FS-29
F = CS-10 Southern Trench EW (03EW2112) temporarily shut down while contaminant mass migrates to well; will be accounted for in CS-10 SR
 BS - Biosparging
 cfm = cubic feet per minute
 ETI - Extraction, Treatment, Infiltration
 ETR - Extraction, Treatment, ReInjection
 EW - Extraction Well
 gpm - gallons per minute
 MGD - million gallons per day
 MCF - million cubic feet
 NA - Not applicable
 SRTF = Sandwich Road Treatment Facility
 SVE = Soil Vapor Extraction
 SWP = Shallow Well Points
 TBD - To be determined

MMR Treatment Systems Mass Balances (A)

Site	Primary Contaminants of Concern (COC)	Total COC mass remaining in plume (lbs) B	Total COC mass removed to date (lbs)
Ashumet Valley	PCE, TCE	243 (2008)	302.4
Ashumet Valley Leading Edge	PCE, TCE		0.1
CS-10 Sandwich Road, Southern Trench, In Plume, Southern/SW , Leading Edge Northern Lobe	PCE, TCE	1254.5 (2005/2007)	5357.0
FS-1	EDB	1.1 (2006)	17.5
	EDB	3.5 (2004)	134.6
FS-12	Benzene	0 (2004)	217.8
FS-28	EDB	4.8 (2006)	14.1
LF-1	PCE, TCE, CCl ₄	745 (2007)	363.7
SD-5N*			
SD-5S* Recircs			
SD-5S* Extraction Well	TCE	2.5 (2003)	14.0
CS-23/LF-1	PCE, CCl ₄	59 (2007)	155.1
CS-4**	PCE, TCE, EDB, 1,1,2,2-TeCA	22 (2006)	
CS-20**	PCE	102 (2006)	108.6
CS-21	TCE	266 (2006)	
FS-29	EDB, CCl ₄	0.3 (2006)	103.4
Total			6788.3

* = System Shut Down

** = Original CS-4 system started up on 3 Nov 93 and was shut down on 27 May 03; redesigned system is operational; and, calculation includes mass removed by original system plus mass removed by new system including both CS-4 and CS-20.

A = Based on COC removal through Sep 2009

B = Based on mass above the MCLs (Date of plume shell/model prediction)